THE MEDICAL JOURNAL OF AUSTRALIA

VOL. II.—29TH YEAR. SYDNEY, SATURDAY, JULY 18, 1942. No. 3.

Table of Contents.

[The Whole of the Literary Matter in THE MEDICAL JOURNAL OF AUSTRALIA is Copyright.]

ORIGINAL ARTICLES— Page.
Applied Physiology of Functional Disorders of the Circulatory System, by R. Douglas Wright .. 37
Sighing Dyspnœa and the Hyperventilation Syndrome, by M. D. Silberberg 38
The Effort Syndrome, by C. H. Fitts 41

REPORTS OF CASES—
Two Unusual Cases, by A. E. Rowden White, M.D., F.R.A.C.P. 43

REVIEWS—
Progress in Pathology and Immunology 44
An Experimental Investigation of Tumours 44

LEADING ARTICLES—
Aviation and its Effects on the Ear 45

CURRENT COMMENT—
The Immediate Replacement of Avulsed Soft Tissue 47
Index to "The Medical Journal of Australia" 47

ABSTRACTS FROM MEDICAL LITERATURE—
Pædiatrics 48
Orthopædic Surgery 49

THE ROYAL AUSTRALASIAN COLLEGE OF PHYSICIANS—
Annual Meeting 50

CORRESPONDENCE— Page.
Hypertension 51
Malaria 52
Anæsthesia and Dental Surgery 52
Radiological Survey of Children's Chests for Tuberculosis 52

NAVAL, MILITARY AND AIR FORCE—
Appointments 52
Casualties 53

AUSTRALIAN MEDICAL BOARD PROCEEDINGS—
Queensland 53

OBITUARY—
George Joseph Ley 54

NOMINATIONS AND ELECTIONS 54

MEDICAL APPOINTMENTS 54

BOOKS RECEIVED 54

DIARY FOR THE MONTH 54

MEDICAL APPOINTMENTS: IMPORTANT NOTICE .. 54

EDITORIAL NOTICES 54

APPLIED PHYSIOLOGY OF FUNCTIONAL DISORDERS OF THE CIRCULATORY SYSTEM.[1]

By R. DOUGLAS WRIGHT,
Professor of Physiology, University of Melbourne.

FOR a paper of the present title it is necessary first to define what is meant by functional disorders, and it would appear that the medical profession usually means by this term a departure from normal behaviour of one or more organs or of the whole organism with no morbid anatomical basis for this abnormality. To this, however, it is usual to add the implication that this abnormal behaviour results from abnormal activity of a nervous system showing no anatomical abnormality.

The nervous system governs or modifies the activity of most of the organs and tissues of the body. As is well known, some of the viscera, such as the heart, function in a fairly adequate manner when all nervous connexions have been cut. Others, such as the bladder, depend on their nervous connexions for even a semblance of normal activity. It is also usual to describe the nervous connexions to the viscera as parts of the autonomic nervous system, and to subdivide this into the parasympathetic and sympathetic systems. For our present purposes this is a most unsatisfactory classification. Admittedly the pathways to these viscera have certain characteristics of response to nervous stimuli and to pharmacological agents, which indicate that there is a difference from the other effector pathway, that to skeletal muscle; but the afferent sides of the arcs for these effectors are not so easily grouped. If the control of the arterioles of the circulatory system is taken as an example, the effector pathway is well known to be through the paravertebral sympathetic ganglia via the grey rami or splanchnic nerves to the arteriolar muscle; but the afferents that call forth a discharge along this pathway from the vasomotor centre may be from a wide field of sensory receptors—for example, the vestibular apparatus, the visual apparatus, the gustatory apparatus, the carotid sinus, or the end organs in the peritoneum or gut. This example also indicates the absurdity of describing the visceral effector pathway as a nervous system. Surely a nervous system contains reflex centres; but the centres which are affected are located within the central neuraxis. I have been able to find no instance in which a true reflex response is mediated by cells in the ganglia of the so-called autonomic nervous system.

We must expect, then, that states which give rise to an alteration of functional behaviour of viscera may arise as a result of alteration of the threshold on the sensory side, from disturbance of the balance in the synaptic area or from alteration in sensitivity on the effector side of the appropriate reflex arcs. Similarly, attempts to treat functional disorders may be directed to these regions. It is also probable that if the disorder is one of the synaptic areas, a discharge along one anatomical pathway only is most unlikely. It is a habit which has grown up during the reign of the autonomic nervous system to speak of "sympathetic discharge" or "parasympathetic discharge" as though conditions arose in which an individual anatomical pathway showed a high degree of activity to the exclusion of all other pathways. In the intact animal this is rarely the case; there is a combination of activity of all the main effector pathways in practically all instances. From one animal to another the predominance may be in any one of the three main effector outflows, even though the stimulus applied to the sensory nerves is the same. A homely example is that in which the strong man goes into a rage in response to the circumstances which cause his wife to faint. Even in the same individual the reaction varies from day to day, depending probably on the state of fatigue and other less easily assessable conditions.

[1] Read at the annual meeting of the Royal Australasian College of Physicians on May 2, 1942, at Melbourne.

It is worth noting that the most important recent accession to our knowledge of the functioning of nervous tissue is the demonstration that neurones appear to be unable either to contract an oxygen debt or to store sufficient carbohydrate to allow normal behaviour for even short periods of activity in the absence of glucose from the nutrient medium. It is thus quite possible that extreme states of reaction resulting in hypoglycæmia may completely disturb the balance of a nervous system.

Some of the remarks made in previous paragraphs have adumbrated the principle that there are certain types of circumstances which give rise to the setting up of what is usually called an emotional reaction. The general characteristics of these emotional reactions appear to be that for each individual there is a discharge along the visceral and somatic effector pathways, predominance of each being variable, and that there is an alteration in the "feeling tone" of the animal, so that the sensitivity to certain stimuli is increased and that to others is decreased. In the case of fear, for instance, Cannon has clearly drawn the picture of raised blood pressure, increased heart rate, raised blood sugar level, inhibited intestinal motility, hyperventilation, increased coagulability of blood and erection of hairs in the hirsute animals, along with fixing of attention on the causal stimulus; that is to say, the response is one which may be called purposive, and, according to one's interpretation, may be said to be integrated for a certain purpose. As has already been pointed out, the degree of variation in response may, however, be great, even to a fainting attack. In the case of the human there is reason to believe that similar adjustments occur, and it is usual for the subject to become aware of the activity of some of the viscera because of the altered activity in combination with the alteration in "feeling tone".

The next step, obviously, is that the subject may transfer his fear from the original environmental circumstances to a somatic equivalent. The organ selected may be that which gave rise to the most obvious sensation during the evident fear, to some organ suggested to the subject either by an indiscreet medical attendant, or by the occurrence of disease of this organ in relatives or friends. The reading of popular publications which have some pretension to medical authority may also be the source of suggestion. Then follows the stage of conditioned reflex, at which a circumstance previously unrelated to his symptoms accompanies the patient's awareness of abnormal functioning of a viscus. Then this circumstance can take the place of the original situation engendering fear, to give rise to the symptoms. By a continued reinforcement it is possible for the patient to become continually aware of his symptoms.

There follows, then, a phase which is ordinarily neglected when disease is being dealt with—a phase of acclimatization or accommodation, during which the pattern of behaviour of the nervous system becomes adjusted to the new abnormal functioning, and the patient finds it extremely difficult to readjust his sensory pattern to the exclusion of the new field, which has become abnormally part of his consciousness. After even quite short periods of time with an abnormal condition animals can so alter their pattern of behaviour that they require quite long periods to recover normal function.

Dealing now with the question of functional disorders of the circulatory system, with particular reference to the syndrome described by Da Costa as the "irritable heart of soldiers" and since then by a large number of people under a large number of other names, we find these general principles represented at all phases. At some period in a person's life a group of circumstances occur in which the patient is uncertain of a non-damaging outcome, and he becomes the subject of fear. The transference to a somatic equivalent is frequently one of his own suggestion by reason of his awareness of his heart's action or of abnormal sensation from his abdomen; but in other cases the medical attendant is the important fixing agent. Then there is the stage of confirmation of the patient's interpretation and perhaps the addition of conditioning stimuli, to be followed if the reinforcement is sufficiently prolonged by chronic invalidism. At all stages, however, so far as one can tell from reviews of cases in the literature, the behaviour of the circulatory system shows no loss of organic performance, merely an ataxia or disproportion between the elements of control at a given level of performance.

Bibliography.

P. Wood: "Da Costa's Syndrome (or Effort Syndrome)", *British Medical Journal*, Volume I, 1941, pages 767, 805, 845.

W. R. Cannon: "Bodily Changes in Pain, Hunger, Fear and Rage", 1929.

I. Pavlov: "Conditioned Reflexes", 1928.

SIGHING DYSPNŒA AND THE HYPERVENTILATION SYNDROME.[1]

By M. D. SILBERBERG,
Melbourne.

THE term "psychosomatic syndromes" has been introduced in recent years as an alternative name for functional disorders. It is more definite and self-explanatory and therefore is preferable, and should be more widely adopted. It is indeed a very general term comprising many functional disorders, such as the symptoms of fatigue and anxiety, psychic disturbances involving disorders of digestion, circulation and respiration *et cetera*. Obviously it is desirable to subdivide this somewhat chaotic collection. Clinical reseach workers are succeeding in this difficult task and are providing adequate physiological explanations of the factors which underlie the disturbance of function. Clinicians are thus in a better position to make a satisfactory diagnosis, to assess prognosis, and to apply rational treatment.

These remarks apply to the functional disturbances of respiration known as sighing dyspnœa and the related hyperventilation syndrome. Although these disorders are important and fortunately easy to diagnose by clinical means, it is surprising that many members of our profession often fail to recognize them. In an article on sighing dyspnœa, Doris M. Baker (1934) stated that it was unknown and unrecognized in practice. Maytum (1938) wrote that the cases in the Mayo Clinic were not recognized prior to admission to hospital; they had been regarded as cases of pulmonary, heart or thyreoid disease, or of asthma. Yet the condition of sighing respiration was long recognized by some of the older writers. Baker (1934) quotes Cheadle and Gairdner as using the term "suspirious" breathing, (*suspire*: to sigh); but these authorities wrongly regarded it as a sign of fatty heart. The writer has also been impressed by the number of cases referred for diagnosis in which this symptom has been mistaken for the breathlessness of serious cardiac disease, such as coronary sclerosis and myocardial degeneration.

It is only when psychosomatic syndromes are clear-cut that nomenclature is precise and satisfactory. Unfortunately this is usually far from being the case; hence, for instance, the difficulty in selecting a suitable term for the syndrome found and described by Da Costa (1871) among soldiers of the American Civil War; he referred to this condition as "the irritable heart of the soldier".[2] Similarly, writers on functional forms of breathlessness have used such varied terms as suspirious breathing, functional dyspnœa, spontaneous over-breathing, over-breathing dyspnœa, sighing breathing, sighing dyspnœa and hyperventilation. In this paper it is proposed to use the two last-mentioned terms.

[1] Delivered at the annual meeting of the Royal Australasian College of Physicians on May 2, 1942, at Melbourne.

[2] Other terms for the condition described by Da Costa (1871) include cardiac neurosis, cardiac neurasthenia, irritable heart, "D.A.H.", effort syndrome, neuro-circulatory asthenia, autonomic imbalance, psycho-toxic heart (psychotoxicosis), Da Costa's syndrome.

When breathlessness is a main symptom, its full characteristics should be elicited. A detailed description should be obtained concerning the mode of breathing, and its relation to fatigue, to emotion or to the degree of exertion necessary to produce it. By such simple means it is not difficult to distinguish between functional dyspnœa and those forms resulting from organic disorders of metabolism, and from cardiac and pulmonary disease. In sighing dyspnœa, inquiry elicits from the patient that there is a sensation of unsatisfied breathing. When various patients were asked to describe in detail what exactly was the sensation experienced, the following expressions were used:

"I can't get a full satisfying breath."
"It breaks off half way."
"I cannot fill my lungs and I get frightened."
"It makes me feel funny."
"I must get to the window for fresh air."
"I have unsatisfied breathing; it feels as if I might stop breathing altogether; it gives me a frightening feeling."
"Sometimes I wake with a choking feeling, especially after a tiring day."
"I feel smothering and cannot get a deep satisfying breath."
"It was like a lump in my chest and I could not get my breath to pass into the lungs."
"I suddenly gasp for breath. I try to fill the lungs by taking long sighs."

This type of breathlessness is related, not to exertion, but to fatigue or emotion. It is a functional, nervous form of breathing, and it does not indicate serious disease. The following are three illustrative cases.

Reports of Cases.

CASE I.—A married woman, aged twenty-nine years, was referred for an opinion because of recurrence of dyspnœa following sore throat. At the age of fourteen years she had had severe scarlet fever with some rheumatic pains. At the age of seventeen years, three days after playing tennis, she developed dyspnœa; a diagnosis of strained heart was made and she was kept at rest for three months. She remained well, but exercised great care on exertion and needed plenty of rest and sleep. She married at the age of twenty-three years and had a normal confinement at twenty-six, though the infant suffered from pink disease (erythrœdema) for ten months. She had a miscarriage at the age of twenty-eight years and her uterus was curetted. She is liable to seasonal hay fever.

On inquiry into the nature of the dyspnœa, she stated that she could not take a satisfying breath and that she sighed and yawned, especially when fatigued; sometimes there was a flickering sensation along the left costal margin. She had rested a lot for the preceding nine weeks. The clinical examination gave negative results and fluoroscopic examination revealed a heart of normal size and shape. Every now and then she took long sighing breaths, stating that "one did not come through"; but she felt unable to hold a long breath.

There is little doubt that in this case strained heart was a mistaken diagnosis, inasmuch as the symptoms appeared three days after the alleged incident of strain whilst the patient was playing tennis. By three months' unnecessary rest and care she had been converted into a heart-conscious individual; this state of mind was aggravated by a fussing mother. The dyspnœa was associated, not with exertion, but with fatigue, and it was of the sighing type. This again became manifest after a recent infection from sore throat. With reassurance, explanation and encouragement she should have an excellent chance of regaining full efficiency.

CASE II.—A man, aged thirty-two years, was a clerk and printer. Two years ago a doctor diagnosed a leaking valve of the heart, but one year later the patient was told that his heart was normal. He was rejected for the Australian Imperial Force. His previous history was unimportant; his mother had diabetes. He complained of a kind of shortness of breath; the breath went half way—he felt that he did not get the benefit of it; there was a feeling of unsatisfied breaths. He was not short of breath on exertion. There were no complaints of palpitation or pain.

On examination he was an excitable, thin, flat-chested type of man. The palms of the hands were moist and the pulse rate was readily accelerated. His blood pressure was 120 millimetres of mercury systolic and 80 diastolic. The heart sounds were excitable, but there were no bruits. Fluoroscopic examination showed that the heart and aorta were normal in size and shape. General examination gave negative results.

This man, because of his inferior physique and temperament, was not Class I for army work, but was fit for Class II B; with proper physical training he should become fit for Class II A.

CASE III.—A woman, aged forty-four years, was referred for an opinion regarding precordial pain, difficulty in breathing and sometimes swelling of the feet. She had been doing her own house work and also canteen duties, and had become unduly fatigued. She felt well until five months ago and then had a nagging ache similar to neuritis over the precordial area, which persisted for hours; work or walking did not make the pain worse. For the past month, mostly after lying down, she felt breathless and had a choking sensation across the chest; she has unsatisfied breathing and feels that her breath may stop altogether. She keeps on sighing and has a frightened feeling. Sometimes she wakes with a choking feeling, especially after a tiring day, and feels weak the next day, but carries on, though with a sense of exhaustion.

The examination showed that her physique was spare and her colour was good. The cardio-vascular system was normal, and electrocardiographic and fluoroscopic examinations gave negative results, as also did the general examination.

Undoubtedly this is a case of fatigue neurosis associated with sighing dyspnœa, and not one of angina.

It should not be difficult to distinguish sighing dyspnœa or hyperventilation from serious forms of breathlessness, such as acute paroxysmal cardiac dyspnœa (cardiac asthma), Cheyne-Stokes breathing, or the dyspnœa of bronchial asthma. The difficulty exists mainly because of the rush and hurry which are the hard fate of so many medical practitioners, so that adequate time for taking a detailed history is not available. Yet it is essential to assess the symptom of breathlessness correctly. It is regrettably easy to initiate an anxiety neurosis by hasty diagnosis, implying serious heart disease, and it is often exceedingly difficult to allay the fear of some dreaded heart disorder. Frequently the patients who manifest sighing dyspnœa also complain of pain and tenderness in the left inframammary region, and it is most important to distinguish this harmless pain from *angina pectoris*. Again, this depends largely on details in the history.

Sighing dyspnœa is more common in females than in males; it occurs in children and adolescents, but is more usual in adults up to the fifth decade. It is rare in elderly patients. Frequently it occurs in middle-aged, obese, emphysematous patients whose respiratory muscles function badly. The vital capacity is low and oxygen debt is readily contracted. Sighing respirations then occur, and if the patient becomes aware of this state the anxiety symptoms supervene. It was this class of patient apparently that the older writers had in mind when suspirious or sighing breathing was thought to be a sign of fatty heart.

Sighing dyspnœa is common in effort syndrome. White and Hahn (1929) found it present in 80% of their cases. Soley and Shock (1938) found a relation between respiratory disturbances and effort syndrome, and regarded it as an anxiety state, with or complicated by the hyperventilation syndrome. Paul Wood (1941) disagrees with this contention. He found breathlessness as a symptom in 93% of 200 cases. The two conditions of sighing dyspnœa and hyperventilation syndrome were first correlated by Maytum and Willius (1934). Hyperventilation syndrome produced by continued sighing dyspnœa causes an excessive loss of carbon dioxide; tissue alkalosis results, and this may culminate in tetany (Fowweather, Davidson, Ellis, 1940). Tetany from overbreathing was observed by J. S. Haldane and E. P. Poulton (1908). It was not till twelve years later that Grant and Goldman (1920) first completely identified with tetany the condition following forced respiration. In normal subjects it may take thirty to forty-five minutes of voluntary overbreathing to produce sufficient alkalosis to induce tetany, whereas it may take only two to five minutes in susceptible subjects. It is necessary to realize that many symptoms usually

occur before the stage of carpopedal spasms of tetany. These symptoms include numbness, tingling, "pins and needles" in the hands and feet, dizziness, light-headedness, "fading out" and sinking sensations, exhaustion, palpitation, cramping pain across the chest. These symptoms often induce anxiety states associated with pallor, sweats and faintness. It frequently happens that the patient thinks that he suffers from serious heart disease and so further induces anxiety states. Relatives and doctors may also be alarmed by these symptoms, which, together with added pallor and sweats, may cause a mistaken diagnosis of coronary disease to be made.

CASE IV.—A single woman, aged fifty years, a semi-trained nurse, had been a delicate child. Later she suffered from severe dysmenorrhœa. She had had several operations, including tonsillectomy, appendicectomy, and a Gilliam operation, and had both injections and operations for varicose veins. The menopause had occurred at the age of forty-seven years. She had not felt well for twelve months and was overtired from continued work. Thirteen days before being examined she had had an attack of vomiting and diarrhœa. She went to a study group, where she fainted. She stated that she was panting for breath and had pain in the arms; the fingers were extended and clenched in cramp for half an hour, and there was also pain in the substernal region. The same night she had similar pains and spasms of the hands. She felt weak and was admitted to hospital after another severe attack, for which the local medical attendant injected morphine. Twice since she had panted for breath, and had suffered from cramps in the fingers as well as pains in the chest and a sensation of constriction over the heart. Her doctor treated her as if she were suffering from coronary occlusion. Examination gave negative results, and electrocardiograms were normal. Her own description of the cramp was typical of tetany, and there can be no doubt she was suffering from the hyperventilation syndrome supervening on fatigue *plus* an attack of vomiting and diarrhœa.

CASE V.—A schoolboy, aged thirteen years, became "nervy" after travelling abroad with his father. He keenly felt the separation from his mother. When abroad he often felt lonely and fatigued. On resuming school he had difficulty in adjusting himself to the work, although he was a bright, intelligent lad. He worked extra hard and had additional tuition. Overwork and strain made him dislike school; added to this, he was interested in making a miniature motor car, which was beyond his capacity and which gave him a great sense of frustration. Concentration became difficult, and he was worried by his inability to master his school work. One day in class he found himself gasping for breath, trying to fill his lungs. He continued to take long sighs for about half an hour, then his hands felt paralysed, there were "pins and needles" and tingling in his hands, knee caps and round his body, and he felt "funny in the head". He remained at home for two days. Back again at school he then had a similar attack, in which his hands were clenched and his appearance alarmed his teacher. The clinical examination gave negative results. I regarded him as manifesting hyperventilation syndrome; explanation and reassurance were given and he has since remained quite well, without recurrence of the attacks.

It will be noted that nervous factors of fatigue, frustration and anxiety were prominent in this case, and there is no doubt that these factors were the basis for sighing dyspnœa, which led to typical hyperventilation syndrome.

CASE VI.—A man, aged forty-nine years, had been treated during a period of eighteen years for cyclical attacks of neurasthenic depression, usually precipitated by overwork. He had consulted many doctors. His blood pressure was always low, the systolic being 90 to 100 millimetres of mercury and the diastolic 60 to 70. Apart from hypotension, general examination revealed no abnormality. A fractional test meal examination revealed pronounced hyperchlorhydria.

His wife died from the effects of an operation. His emotional strain was great in her post-operative stage. On the evening of the bereavement he was seen in consultation. He was complaining of cramping pain across the chest and down the arms, associated with numbness and cramp of the hands. This had followed sighing breathing. He was convinced that his end was near—so much so that he called for the members of his family and in their presence requested me to take notes of certain final bequests which were not in his will. He was strongly reassured that there was no cause for alarm and that his condition was due to a functional state. The symptoms were relieved by an injection of morphine and did not recur, and he has since remained in his usual state of health.

This case illustrates the fact that pain in the chest and *angor animi* are not synonymous with *angina pectoris*. The functional basis was readily recognized from the association of sighing dyspnœa, paræsthesiæ and tendency to tetany.

Discussion.

There is a type of subject who, by reason of his special psycho-physical make-up, is particularly prone to functional disturbances of many kinds. These are the "nervy", highly strung and neurotic type of people with "weedy" physique and poor vasomotor and somatic tone. This group, so frequently met with in medical practice, may for the sake of brevity be classified as the "H.V.H." type—hypersensitive, visceroptotic and hypotensive. They often present typical instances of psychosomatic syndromes, including sighing dyspnœa, hyperventilation syndrome, effort syndrome, anxiety states *et cetera*. They offer examples of disharmony in the functions of the autonomic nervous system together with disturbed endocrine balance, both of which occur in them very readily. Such unbalanced interactions produce many vasomotor symptoms, such as flushes, pallor, faintness and dizziness. It is little wonder, then, that owing to these symptoms these people readily develop an anxiety neurosis, because the above-mentioned symptoms of autonomic and endocrine imbalance produce apprehension and worry. These two psychical states imply that the same physical effects will occur as those seen in fear and fright—less intense, but far more prolonged. The principal symptoms thus produced are palpitation, tremor, sweating, pallor or flushes, faintness, sinking sensation, changes in respiration and many others. They may be attributed to disordered function of the vasomotor, endocrine and visceral systems, including changes in the biochemistry of the body, primarily brought about by a disturbed psycho-physical mechanism originating from emotion.

It is thus seen that the symptoms of worry and anxiety have a psycho-physical or psychosomatic basis, and appreciation of this fact enables many functional disturbances to be viewed in correct perspective. The worried subject wastes nervous energy. Worry solves no problem, it only creates a further one of ill health. Insomnia, fatigue and irritability readily occur, and exhaustion becomes severe. Sighing dyspnœa is an expression of fatigue, and so sighing dyspnœa easily appears in this type of person. As has been stated before, it is also frequent in obese, emphysematous individuals. In these, poor respiratory excursion leads to lowered vital capacity and oxygen debt, hence sighing and hyperventilation occur and may become excessive, leading to the syndrome under discussion.

The prognosis is good for patients presenting sighing dyspnœa occurring either with or without hyperventilation syndrome. However, it should be remembered that such functional conditions may be superadded to organic forms of disease; naturally, prognosis in such a case is influenced by the basic pathological process.

Treatment.

It is essential to elicit the underlying causes and endeavour to treat them. This implies consideration of the psychological aspect, which may include many factors, such as psychopathic personality, social maladjustment, behaviour problems, anxiety states based on worry and fear, as well as conditions inducing undue fatigue. In many cases it is within the scope of an experienced medical practitioner without specialist knowledge in psychoneuroses to treat these patients. In the more complicated, abstruse and hidden mysteries of psychosomatic states, expert advice will be necessary to secure a satisfactory result. In general, it is sufficient to give reassurance that the breathlessness is harmless and not due to organic disease. The mechanism should be explained in simple, non-technical language, and confidence should be instilled by a cheerful, optimistic demeanour. The futility of worry should be emphasized, as well as the effects which are produced by this state of mind. Advice is necessary concerning conditions involving fatigue and nervous strain. Weight-

reducing diets and breathing exercises are useful for obese, emphysematous patients. Symptomatically, sedatives are useful, such as bromides and phenobarbitone.

In hyperventilation tetany prompt relief is produced by the inhalation of carbon dioxide, such as 2% to 5% of carbon dioxide in oxygen ("Carbogen"). Rebreathing is also effective, and may be carried out in a simple manner by the use of a paper bag. Injections of morphine will also control tetany, and correction of tissue alkalosis may also be brought about by the administration of ammonium chloride or of dilute hydrochloric acid.

Summary.

Sighing dyspnœa is a common form of functional breathlessness. Occasionally it is excessive and produces the hyperventilation syndrome, which may culminate in tetany. The purpose of this paper is to call attention to the need for more frequent recognition of these forms of functional breathlessness.

Bibliography.

D. M. Baker: "Sighing Respiration as a Symptom", *The Lancet*, Volume I, 1934, page 174.

J. M. Da Costa: *The American Journal of the Medical Sciences*, Volume LXI, 1871, page 17.

F. S. Fowweather, C. L. Davidson and L. Ellis: "Spontaneous Hyperventilation in Tetany", *British Medical Journal*, September 21, 1940, page 373.

S. B. Grant and A. Goldman: "A Study of Forced Respiration; Experimental Production of Tetany", *The American Journal of Physiology*, Volume LII, 1920, page 209.

J. S. Haldane and E. P. Poulton: *The Journal of Physiology*, Volume XXXVII, 1908, page 390.

C. K. Maytum: "Sighing Dispnea: A Clinical Syndrome", *The Journal of Allergy*, Volume X, November, 1938, page 50.

C. K. Maytum and F. A. Willius: "Abnormal Respiration of Functional Origin", *Proceedings of the Staff Meetings of the Mayo Clinic*, Volume IX, May 23, 1934, page 308.

P. D. White and R. G. Kahn: "Symptom of Sighing in Cardio-Vascular Diagnosis, with Spirographic Observations", *The American Journal of the Medical Sciences*, Volume CLXXVII, 1929, page 179.

P. Wood: "Da Costa's Syndrome (or Effort Syndrome)", *British Medical Journal*, Volume I, 1941, pages 767, 805, 845.

THE EFFORT SYNDROME.[1]

By C. H. FITTS,
Melbourne.

THE term effort syndrome, according to the report of the Medical Research Committee (1918) covers all persons in whom breathlessness, pain, exhaustion, giddiness and fainting are experienced, for the most part during, or after, exertion . . . In the report of the Medical Research Committee it was said "The term effort syndrome is non-committal on the pathological side; it expresses a fact of which there is general recognition, namely that the chief symptoms are unmasked or aggravated by exercise; it generalises many phenomena of the malady in that these are no more than exaggerated manifestations of healthy responses to effort". If for "pathological" one substitutes "psycho-pathological", and for "exertion" or "effort" one substitutes "emotion", this statement applies well to the psychiatric position, so far as the nature and classification of the syndrome goes.

The foregoing observations were among the remarks of Aubrey Lewis when he opened a discussion on the psychiatric aspects of effort syndrome at the Royal Society of Medicine in 1941.

In one of the theatres of war during the first six months of 1941, out of a total number of 1,751 psychiatric casualties there were 28 with a diagnosis of effort syndrome and 350 with a diagnosis of functional dyspepsia. I fail to see that there is any underlying difference between these two conditions and that the paraphrased definition "emotion syndrome" does not apply equally well to both.

On one occasion last year the medical officer in my wards at a military hospital was tactfully abstracting the patients with functional dyspepsia to be referred to the psychiatrist. He was prepared to allow me to manage those who complained of breathlessness and palpitation. The very distinction he had drawn betrayed his wrong line of thought and his false reasoning. Surely if one false barrier has been broken down, it is that which diverts the patient with effort syndrome to those interested in cardiology, or those with dyspepsia to the gastro-enterologist, or both groups straight to the psychiatrist.

It is commonly held that effort syndrome has practically ceased to exist, and with that all will agree. There can be little reason, then, for a detailed discussion of the symptoms and signs. Dr. Silberberg has discussed the most interesting and provoking portion of the syndrome—one which has until recently had too little attention. I may say that although I have never recognized the hyperventilation syndrome, I have seen far more patients who present themselves with functional disorders of respiration than with the fully developed picture of effort syndrome. Interesting biochemical changes may take place in effort syndrome and in sighing breathing; but I cannot believe that these states can be explained entirely on what transpires at the respiratory centre. At the bedside I would direct your attention to the respiratory suburbs and to the mechanical side of respiration. In this complicated act the facial and the vagus nerves, the cervical and brachial plexuses, and the phrenic and thoracic nerves all play a part. The chests of those persons suffering from bronchial or cardiac asthma with congestive failure, with emphysema, or even the chest of the sedentary worker in normal health, on examination, will bear witness to the fact that they have forgotten, if indeed they ever knew, how to breathe.

One of the values of discussing a vanishing phenomenon lies in the application to its successor of the lessons to be learned. I am regarding effort syndrome as an emotional disturbance which presents itself on this occasion by the cardio-vascular system, on another occasion by the respiratory tract, and on a third occasion by the gastro-intestinal tract. In the realm of organic disease, tuberculosis and syphilis may declare themselves in various ways. It would of course be difficult to explain the displacement of all other clinical forms of syphilis by, for example, cardio-vascular syphilis. Why, then, is functional dyspepsia so common now and effort syndrome so rare? It is easier to answer the former question than the latter.

In a strange or uncivilized country it may be necessary to resort to symbols and signs to make oneself understood. I imagine that much the same problem presents itself to the unfortunate person whose emotional upset sends him to his doctor. The international language of today is dyspepsia, and the symptoms and signs are accessible to all in the Press and in wireless broadcast advertisements. Is it cynical or far-fetched to suggest that for some years now hydrochloric acid in the stomach and its neutralization with antacid powder have surpassed in selling value uric acid in the blood or digitalis for heart disease?

Do the emotionally unbalanced consciously select the symptomatology with which to present their case? A family history of cancer, of ulcer or even of dyspepsia is enough to suggest to the anxious that their vague discomfort in the epigastrium is of serious moment. Then, too, symptoms of functional dyspepsia may occur in patients with organic disease of the stomach—an observation which reminds me that Adler sought to explain functional disorders on the ground that they appeared in those organs which had been the seat of trouble in earlier years.

Perhaps, too, when man is herded together in armies symptoms are handed on to those who are receptive, in that mysterious way in which news or rumour spreads.

We reap in war what we sow in peace, and neither effort syndrome nor functional dyspepsia belies this statement. There is enough evidence to show that the latter is common now because of circumstances in the years before this war. Were conditions prior to the last war such as to turn the psychiatric casualty's thoughts towards his heart rather than elsewhere? It is astounding how rapidly the picture of effort syndrome may develop. Indeed I permit myself to wonder if a cardiologist, possessed of

[1] Read at the annual meeting of the Royal Australasian College of Physicians on May 2, 1942, at Melbourne.

an evil genius, let loose in a ward devoted to functional dyspepsia, could not turn every case into one of effort syndrome. I have seen a youth with mitral stenosis develop effort syndrome a few days after his rejection for heart disease, of which he was previously ignorant. Incidentally I should think that effort syndrome was more common with mitral stenosis than with any other form of organic heart disease. Left inframammary pain is almost an invariable accompaniment. It is perhaps not unconnected with the slapping impulse at the apex.

I have a small experience of effort syndrome, but some of it has been illuminating.

Early this year a man brought a lively, precocious child of twelve years to me, with a request that I should give an opinion as to whether he had organic heart disease. Both the history and the examination led me to believe that he was perfectly healthy. At the end of my examination the father asked me if I would examine his heart too, while he was in town. He then told me that he had a permanent pension of 20% for "D.A.H." from the last war. He was abiding loyally by the terms of this assessment; he was 80% a dairy farmer.

I have recently seen two country men of apparently good type. One is the erstwhile country tennis champion invalided from a tropical climate for effort syndrome; the other developed it after working in a gas mask. Both these men had to be "boarded" out of the army. They are monuments to the obtuseness of their combatant officers. Of slow mentality, honest, and with good records in the past, they present examples of what Canby Robinson (1941) would call situational neuroses. Baffled and bewildered, they react excessively to external situations which are filled with conflict. Perhaps in twenty years' time, receiving 20% pensions, they too will be bringing their children for examination of their hearts.

There are certain fundamental truths which are agreed upon by all as the basis for the management of patients with effort syndrome. No circumstances should be allowed to override them. If any good purpose is to come out of this discussion, then it should be directed to an examination of how far these truths apply to the more pressing problem of functional dyspepsia.

It is stated to be unwise to mention the heart in the diagnosis of effort syndrome. Why, then, mention the stomach or dyspepsia in another type of the emotion syndrome? It is also stated that patients with effort syndrome should not have repeated examinations or elaborate investigations of their cardio-vascular systems. Why should patients with functional dyspepsia have far more costly and time-consuming investigations of their gastro-intestinal tracts? Medical boards frequently ask for a barium meal investigation when this has already been carried out overseas. Recently I have had the experience of having a man deferred by a medical board for a further barium meal examination. Two reports were already available from overseas, and were in agreement. This man enjoyed the doubtful pleasure of three barium meal investigations within six months.

Another statement is that hospital is not the place for a patient with effort syndrome. Why is it the place for a patient with functional dyspepsia? "The place to prevent psychological casualties is in the front line, and the methods are those of general practice rather than the hospital ward." That is the concluding sentence in the leading article in the *British Medical Journal* of June 7, 1941. I will go further and say that the methods are those of common sense and understanding, and that this is the province above all of the combatant officer.

Digitalis, a specific remedy, is said to have no place in the treatment of effort syndrome. Why has antacid powder, a specific remedy, so large a place in the treatment of unspecified dyspepsia? If the former convinces the patient that he has heart disease, then the latter convinces him that he has dyspepsia or "ulcers".

Sedative drugs are held to have no place in the treatment of effort syndrome. Have they a place in the treatment of dyspepsia?

Reassurance, if it consists in telling the patient that there is nothing wrong with his heart, is said to be valueless to a man who is convinced that the truth is otherwise. It is equally valueless to the man who believes that he has indigestion.

In a series of 200 cases of effort syndrome, Wood (1941) found that regular soldiers formed only 6·5% and that volunteers formed 30% of the total. Conscripts comprised 24·5%.

The same relative frequency has been shown to occur in war neurosis in general. There is no reason to think that the figures would be any different for functional dyspepsia. There are many reasons why this should be so. Volunteers include those who wish to escape from private difficulties; who are emotionally unbalanced and swept away by a surge of patriotism which ebbs on the first day in camp; who withhold information about their health and age which would have brought about their rejection. There is, too, a feeling that the volunteer has privileges, and this may subtly undermine the control of those who are responsible for his health and discipline. It should be more widely known that there are, from the medical and psychological viewpoints, no qualities gained in a volunteer army which cannot be equally obtained in a conscript army.

I have attempted to apply the facts which have emerged from the study of effort syndrome to the study of functional dyspepsia. I wish now to make a plea that we should apply the lessons of war to the problems of peace.

There is nothing vital in war, which is not a scale experiment of what may be a peace-time problem. Whitehead (1934) stated that "existence is activity ever merging into the future. The aim at philosophic understanding is the aim at piercing the blindness of activity in respect of its transcendent functions." Perhaps, then, the philosopher is the rare person who can foresee in peace-time what most of us can envisage only in the more intense light of war.

What would the philosopher have foreseen five years ago that we can see today at the eleventh hour? It is widely held that the soldier of today is not the equal of his forebear of the last war period.

Perhaps the philosopher would point to the slackness of moral fibre in the last twenty years, to the decreasing importance of family life, and to the deterioration of physique with altered conditions of living.

The front line unit in war has its counterpart in peace. It is the domestic unit. Under service conditions the soldier is in the care of his platoon commander. The latter stands in the same relationship as the father to the child in peace-time domestic life.

It is stated repeatedly that too many combatant officers do not know how to look after their men. It is of vital importance that they should be told. In the Middle East, British cadets are given admirable lectures at the training school on the "soldier's nerves".

The regimental medical officer is akin to the general practitioner and requires similar wisdom and experience to the very best among them. It is no fault of his that he has had no time to acquire these virtues. Behind him, in the line of communication, lie the field ambulance, the casualty clearing station and the general hospital. In spite of all this, men with effort syndrome and functional dyspepsia find their way into hospital more than once.

There is this to be remembered: if the number of personnel under medical care reached 10% of the force, the army administration would cease to be proud of its medical service. It would show an understandable concern at the depletion of the front line.

What was the counterpart of this organization in peace-time? The domestic unit, the front line, was ceasing to be an integral and stable part of our social life. Many people have no general practitioner. They decide themselves that their disease requires a doctor. Their line of communication is from their front line straight to the hospital. Who can point to any hospital annual report which does not convey pride and complacency in the yearly increase of out-patients? Where is it

pointed out that half these people can never be adequately treated so far from their front lines; that many of them are social and not medical problems. Out-patient departments are sometimes monuments to a thoughtless drift. Demoralizing to patient and doctor, they are often carried on under conditions which are unworthy of the dignity of our profession and of the human race.

Who pierced the blindness and gauged the depletion of the domestic front line, or even found in it cause for alarm, as the administration does in the scale experiment of war? The opacities have cleared away, and we can see now that these war-time problems are just peace-time problems to which we were blind.

It is because I believe that these things are infinitely more important than a discussion of the cause of palpitation in a vanishing syndrome that I bring them forward.

Conclusion.

These, in summary, are some of the matters which I think worthy of discussion.

1. That the physical and psychological balance in our communities is poor.

2. That too many of the patients with emotional syndromes have an unsatisfactory family life.

3. That an army in which all are conscripted is superior to a volunteer army and will have a smaller incidence of psychiatric casualties.

4. That the combatant officer, and not the regimental medical officer, stands in the same relationship to the soldier as the father to the son; that in each instance some men are not fitted or trained for this care.

5. That the regimental medical officer holds the most important post in the army medical services and needs more than youth on his side.

6. That hospital, despite medical boards and pensions, is not the place for men with effort syndrome or functional dyspepsia.

7. That the organization which decides whether a person shall go to a public hospital in civil life should be at least as adequate as obtains in the army.

8. That digitalis and antacid powder are alike specific remedies.

9. That there is an opportunity of applying the lessons of war to peace-time social service. Each has its front line.

10. That treatment of these personality disorders is a front-line job for the regimental medical officer, then for a general physician, and only in the last resource for a psychiatrist. The last has nothing to fear. McGraw (1941) states that the time to send the patient to the psychiatrist is recognizable by the physician as the moment when he realizes "a failure to feel at ease in the presence of the problem".

It is said that effort syndrome has been banished because today the army does not march. If Napoleon's dictum is true, then effort syndrome is indeed dead, for soon the armies will be unable to march because of dyspepsia.

Bibliography.

A. Lewis: "Psychiatric Aspects of Effort Syndrome", *Proceedings of the Royal Society of Medicine*, Volume XXXIV, 1941, page 533.

McGraw: Cited by G. C. Robinson, *loco citato*.

G. C. Robinson: "'Personality Disorders' Causing Digestive Complaints", *Bulletin of the Johns Hopkins Hospital*, Volume LXVIII, March, 1941, page 203.

P. Wood: "Da Costa's Syndrome (or Effort Syndrome): Mechanism of Somatic Manifestations", *British Medical Journal*, Volume I, May 24, 1941, page 767.

A. N. Whitehead: "Nature and Life", 1934, page 96.

Reports of Cases.

TWO UNUSUAL CASES.

By A. E. ROWDEN WHITE, M.D., F.R.A.C.P.,
Melbourne.

Two unusual cases of interest have recently come under my observation, and the following is a brief account of them.

Case I.

G.L., aged twenty-four years, a taxi-cab driver, was admitted to one of my beds at Saint Vincent's Hospital; eighteen months earlier he had suffered from pleuro-pneumonia and had had a considerable quantity of fluid in his chest, but he had apparently made a good recovery. At the time of his admission to hospital eighteen months after this occurrence, he had presented himself at the out-patient department to see whether his general health was satisfactory, and it was found that the left side of his chest, which was the side attacked previously, was full of fluid. Although he was a "lightweight", the patient said that he felt perfectly well, that he had no cough and no night sweats, but that he appeared to have some shortness of breath in carrying out his duties. At the time of his original illness acid-fast bacilli were found in his sputum. It was a surprise to the patient to find it necessary to enter hospital, because, apart from this shortness of breath, he considered his health to be perfectly satisfactory. During the three weeks he spent in hospital he was afebrile; his pulse rate averaged 76 per minute, his respirations numbered 20 per minute and his systolic blood pressure was 126 millimetres of mercury. An exploratory puncture revealed chylous fluid containing cholesterin crystals. As no good purpose could be served by efforts to determine the site of leakage from the thoracic duct, the patient was discharged from hospital to follow his usual occupation.

Case II.

The second patient was a man, aged eighty-eight years, whom I had attended at varying periods during the past twenty years, first for hypertension and prostatic symptoms. He lived a very active life, controlling a large business and being obliged to travel a great deal. Eleven years ago he began to suffer from attacks of temporary partial blindness; examination of the fundi revealed "nipping" by "silver-wire" arteries. From this time onwards deterioration of the retinæ progressed. One year later he presented himself because he had noticed breathlessness and considerable swelling of his legs above his boots. He felt worried because his heart was "missing a beat", and he considered that this caused "light-headedness" and insomnia. An electrocardiographic examination revealed left bundle heart block. The blood pressure was 190 millimetres of mercury systolic and 90 diastolic; the urine was clear, its specific gravity was 1,025, and it contained no albumin and no sugar. The patient was so busy that he refused to rest, but agreed temporarily to relinquish trips into the country. Three months later he said that he felt "tip top"; he was comparatively free from his congestive heart failure, notwithstanding the much enlarged heart (the apex beat was in the sixth intercostal space, six inches from the mid-sternal line); his blood pressure was 210 millimetres of mercury systolic and 100 diastolic, the pulse rate was 66 per minute and the cardiac rhythm was regular. Electrocardiograms still revealed left bundle heart block, and continued to do so for the remainder of his life. During the next three years he had minor and easily controlled attacks of congestive heart failure, and his blood pressure progressively fell to 145 millimetres of mercury systolic and 80 diastolic.

Early in 1939 he had a mild attack of "influenza", and a slow convalescence of several weeks' duration followed, during which he complained of great weakness, mental depression and attacks of dizziness. The systolic blood pressure was 122 millimetres of mercury and the diastolic 80, the pulse rate was 60 per minute and the cardiac rhythm was regular. At this time early glaucomatous changes in both eyes developed. From then onwards his very active physical life ceased, but his mental alertness was unabated, and for the next three years he continued to dominate the management of large business interests.

I saw him again in the late afternoon of April 17, 1942, in consultation with Dr. R. A. McOmish. The patient was in a state of decerebrate rigidity and was completely unconscious and breathing stertorously. His pulse rate was 68 per minute and the rhythm was regular; the temperature was 99° F., and the systolic blood pressure was 160 millimetres of mercury and the diastolic 90. The pyramidal reflexes appeared to be normal.

Thirty-six hours previously Dr. McOmish had been urgently called to see the patient, who had tripped in the lavatory and plunged forward, striking his nose with force on the floor; the nose was fractured and lacerated. He had a profuse epistaxis, which was controlled by plugging. He did not appear to be suffering from shock, and walked some distance along a passage to his bedroom. During the remainder of the night he was restless, but next day his condition was satisfactory, and he was given a sedative that evening. The following morning he was not so well; his limbs appeared to be somewhat rigid and he was not easily roused. By lunch-time he was unconscious and the rigidity had increased; these signs were more pronounced by 4 p.m., as has been noted earlier. X-ray films of the skull taken by Dr. McOmish revealed no fracture. Lumbar puncture yielded cerebro-spinal fluid under pressure, faintly yellow in colour; the fluid contained a large amount of protein (200 milligrammes per 100 cubic centimetres) as well as a large number of cells.

The patient's condition was much improved the next day, when he was examined by Dr. McOmish, Dr. F. P. Morgan and myself. He was conscious; his speech was slow and lalling, but otherwise he answered questions correctly. His limbs had lost their rigidity, although muscle tonus was slightly increased. The improvement was of only short duration; he became unconscious the following day and relapsed into a state of decerebrate rigidity. Another lumbar puncture yielded cerebro-spinal fluid stained deeply pink. The patient died the same evening.

The consensus of opinion was that small hæmorrhages took place into the brain stem at the time of injury, and were followed by œdema around the punctate hæmorrhages causing the decerebrate rigidity. The improvement and relapse were probably due to absorption of the œdema, followed by further hæmorrhages or œdema, or both.

Reviews.

PROGRESS IN PATHOLOGY AND IMMUNOLOGY.

IN these busy days medical men and women welcome the appearance of reliable year books from which they can obtain a bird's-eye view of recent work in a particular branch of medical science, and at such leisure as may remain to them, delve more deeply in the literature of a special subject that attracts them. It is so fatally easy to claim excess of work as justification for neglect of medical literature. The Year Book Publishers make it difficult to support such a claim. Their books are of a convenient size and they are so arranged that even a few minutes' reading can be undertaken with profit. "The 1941 Year Book of Pathology and Immunology" covers 165 experimental studies and 145 clinical studies; it also deals with 103 diagnostic procedures in regard to 157 disease conditions.[1]

In the section on general pathology there is a summary of work on the pathology of shock by Virgil H. Moon. He describes the morphological changes which he states are of a distinctive and significant pattern. The type of hyperæmia which accompanies shock is not designated accurately either as active or passive, for it does not result from increased circulatory activity, from venous obstruction or from cardiac deficiency. Moon terms it capillo-venous hyperæmia. There are several references to those interesting protozoan conditions known as histoplasmosis and toxoplasmosis; Oettel's views on rheumatoid sepsis are mentioned and Goodpasture's work on the pathology of virus disease is described. In the section on the pathology of tumours the discussions include the actions in relation to tumours of endogenous blastogenic substances, of amines, of androgens and œstrogens, of vitamins *A* and *E*, and of diet. The section on the cardio-vascular system is full of interest; many will regard it as the most interesting in the book. Hypertension in its various aspects receives much attention and other arterial conditions are not forgotten. Cancer of the tonsil is included in the chapter on the respiratory system. Pancreatic conditions are prominent in the chapter on the alimentary system. In the section on the urinary system and male genitalia it is pointed out that the observations of de Navasquez on the excretion of hæmoglobin in three cases of transfusion fatality disprove the theory of mechanical renal obstruction in transfusion deaths. Under the heading of the female gentalia and breast many articles on malignant disease of the latter organ are mentioned and prominence is given to Muir's work on the evolution of carcinoma of the breast.

The half of the book devoted to immunology opens with a short reference to Hans Zinsser who died in 1940. The two most important sections of this half of the book deal with immunity to (*a*) bacterial diseases, and (*b*) viral and rickettsial diseases. These diseases are too numerous to be set out in detail; little of importance seems to have been omitted. Since there is evidence for a sort of synergism between chemotherapeutic agents and antibody, a section on chemotherapy has been included. One of the most important sections in this part of the book is that devoted to blood groups. Here the Rh factor and *erythroblastosis fœtalis* are reviewed at some length.

This volume clearly is of considerable value. It reflects credit on Howard T. Karsner who has edited the part dealing with pathology, and on Sanford B. Hooker who has edited the part devoted to immunology.

[1] "The 1941 Year Book of Pathology and Immunology", edited by H. T. Karsner and S. B. Hooker; 1941. Chicago: The Year Book Publishers, Incorporated. Crown 8vo, pp. 623, with 136 illustrations. Price: $3.00.

AN EXPERIMENTAL INVESTIGATION OF TUMOURS.

J. C. MOTTRAM gives an account of his experimental studies on the action of various damaging agents on the structure and activity of protozoa, especially paramecia.[1] Most of the agents used were those capable of producing tumours when applied to animals. Their application to paramecia resulted in the appearance of abnormal organisms which, when isolated, continued to reproduce abnormal forms, often characterized by giant or multiple nuclei. The author believes that the polymorphism of mammalian tumour cells is essentially similar to that of abnormal paramecia produced by carcinogenic agents, and that in both cases there has occurred a similar irreversible change in the affected cells. The polymorphism of the cells of tumours is thus given a new significance; "instead of being looked upon as a reaction to adverse conditions, it is considered to be a characteristic of new growths". This principle is employed by Mottram to explain many of the features of the growth of tumours, such as variations in structure from part to part, differences in structure between primary and metastatic growths, the great cytological variation of many malignant tumours, and irregular variations in the number of chromosomes.

Tumours consist of mixtures of cells of varying growth rate and structure, often with segregation of different types in different parts of the tumour. Mottram believes that the neoplastic change may be more in the cytoplasm than in the nuclei of affected cells, and rightly points out that the cytoplasm contains many important parts, such as mitochondria, Golgi apparatus and chromidia, in one of which the fault may lie. Thus he supports the view that carcinogenic agents have a direct action on the cells, and believes that abnormal races of protozoa produced by such agents may well prove to be the best material for investigating the nature of the essential change.

Mottram's work has been carefully carried out, and his results demand the attention of all cancer workers. His conception that abnormal protozoa produced by carcinogenic agents are equivalent to mammalian tumours will be questioned because of the wide taxonomic differences of the cells concerned. However, Mottram recognizes this, yet succeeds in drawing a striking picture of the parallelism between his protozoal abnormalities and the phenomena of neoplasia.

All interested in fundamental cancer problems must read this work.

[1] "The Problem of Tumours: An Experimental Investigation", by J. C. Mottram, M.B. (London); 1941. London: H. K. Lewis and Company Limited. Demy 8vo, pp. 100 with 9 tables and 33 illustrations. Price: 7s. 6d. net.

The Medical Journal of Australia

SATURDAY, JULY 18, 1942.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: Initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

AVIATION AND ITS EFFECTS ON THE EAR.

SOME idea of the importance of the ear problem in aviation may be gathered from the statement, authoritatively made, that pilots suffer from occupational disturbances of the ear more often than from all other occupational disabilities combined. This takes no account of the discomfort due to aural effects experienced by passengers in commercial and other aeroplanes. The conditions of flight which affect the ear most of all are changes of atmospheric pressure during ascent and descent, noise, and vibration. H. G. Armstrong, in "The Principles and Practice of Aviation Medicine", states that the first of these three conditions is increasing in importance because of the increased climbing ability of modern aeroplanes, while noise and vibration are decreasing in importance as a result of recent advances in aircraft design. When Armstrong wrote his book (it bears the date 1939) he expressed surprise that it was possible to find so little in medical literature which would give definite information about the effect of any of the conditions just mentioned. He stated that some of the information was speculative, that some appeared contradictory and that certain opinions could in these circumstances be regarded as little more than tentative. Since 1939 some additional work has been done, though not a great deal; but experts have had ample opportunity to make observations. The fact that a discussion on the effects of flying on the nose and ear was held last December at a joint meeting of the Sections of Otology and Laryngology of the Royal Society of Medicine[1] makes reference to the subject appropriate. Two facts will emerge from such a discussion—the first is that under present conditions a certain amount of permanent disability to the ears seems inevitable; the second, that disability is less likely to affect air recruits whose ears are and have always been healthy than those whose ears are damaged by previous disease or are susceptible to acoustic trauma.

[1] *Proceedings of the Royal Society of Medicine*, January, 1942.

Noise during the flying of an aeroplane is derived chiefly from the propeller and the engine exhaust and to a lesser extent from the moving parts of the engine itself, from the slip stream and from vibrating structures inside the cabin. Armstrong points out that the propeller is the source of an intense sound, but that the exact method by which this sound is produced is not clearly understood. When the tip speeds of the propeller reach a value somewhere between 0·7 and 1·0 times the speed of sound, the sound intensity is greatly increased. Thus the only known method of reducing propeller noise is by reduction of the propeller tip speed. The character of the noise from the exhaust depends on the number of cylinders in the engine, the number of revolutions per minute, and the length of the exhaust stacks. Unfortunately no aircraft muffler so far designed has been found practicable, and noise caused by the exhaust has not been reduced. A complication is presented by the fact that unless the noise from the propeller and the noise from the exhaust are both reduced together, little benefit will result. This is because if several noises arrive at the same point with equal intensity, the combined noise level will be only a few decibels above that of any one component. Armstrong illustrates this with the statement that if the engine exhaust and the propeller together make a sound equal to 120 decibels, complete elimination of one or the other will reduce the noise level to only 117 decibels. There is another complication. When attempts to reduce aeroplane noise at its source were unsuccessful, the problem was attacked by the sound-proofing of cabins. "This problem is not alone one of reducing the transmission of sound into the cabin for no matter how small the transmission of the walls the sound within the airplane will quickly build up to this sound after it has entered." It also has to be remembered that the present-day pilot has not only to contend with noises originating in his machine; he also has to listen to the sounds and noises coming from the earphones of aircraft radios. While it is true that the intensity of radio sounds can in most cases be controlled by the pilot, it must be remembered "that this intensity must be great enough to overcome the masking effect of the airplane noise". While Armstrong concludes from the evidence available to him that deafness in pilots is not so extensive as was formerly believed, and that it is dependent to a considerable extent on individual susceptibility, he also points out that the effect of airplane noise on the pilot varies considerably with the intensity and character of the noise. With a noise level of 80 decibels or more, repeated and prolonged exposures probably produce deafness; a noise level of 90 decibels or more is "definitely harmful" to the ear. What is described in the "Medical Annual" for 1940 as a most important paper, was published in *The Journal of Laryngology and Otology* of September, 1939, by E. D. D. Dickson, A. W. G. Ewing and T. S. Littler. These authors found that persons exposed to the noise of aeroplane engines without protection to the ears soon showed deafness for high tones. They pointed out that at first the loss was only temporary, but that it gradually became permanent; deafness might not be noticed by the patient until the speech-hearing frequencies were affected. They found that the loss in bone conduction and air conduction was parallel. The curious point was that although the loss of hearing was in the high tone range, analysis of

aircraft noise shows that all the components of large amplitude are of low frequency. F. W. Watkyn-Thomas, who comments on this paper in the "Medical Annual", states that the loss of high tones with a low tone noise described by Dickson and his two fellow workers is so contrary to all previous experience that it is necessary to regard with some reserve the results of the noise analysis rather than the clinical observation. Dickson, who is Consultant in Oto-rhino-laryngology to the Royal Air Force, was one of the speakers at the recent Royal Society of Medicine discussion. Referring to the suggestion that a low tone caused a high tone deafness, he said that the explanation was not clear. He believed that with a complex noise of high overall intensity damage was inflicted by the excessive sound pressure on the most susceptible part of the cochlea—the basal coil. By virtue of its situation the basal coil might probably bear the brunt of the insult. He mentioned two other possibilities. One was that sudden instantaneous peaks of high intensity, not recorded by available instruments, might occur at frequent intervals at 2,048 cycles per second and thus be responsible for "the dip" at 4,096 cycles per second. The other was that the external auditory meatus, which has been shown to have normally a characteristic natural period, might act as a resonator, intensifying a frequency in a complex sound in the region of 3,000 cycles per second, and thus cause "a dip" at 4,096 cycles per second. In his concluding remarks Dickson said that the wearing of a flying helmet with telephones attached afforded the fullest protection to flying personnel in the Royal Air Force. It is comparatively easy to reduce or damp down the high-pitched tones, "and if as recent experiments have demonstrated, high notes of high intensity cause more damage than low ones of the same intensity this may explain the success obtained in protecting ears against the injurious effects of noise by the wearing of a helmet with telephones attached".

The changes in atmospheric pressure during ascent and descent are responsible for the commonest disturbances of the ear and nose. In a balloon flight in 1783 the balloonist reported severe pains in the ears. Armstrong points out that the cause of these pains has been known in a general way ever since they were first reported, but that until recently little attention has been paid to them. During the war of 1914-1918 otologists were concerned more with the vestibular portion of the ear and the middle ear was neglected. Later it was recognized that pilots who had difficulty in ventilating their middle ears were handicapped in their flying and candidates for flying were required to have patent Eustachian tubes. But healthy Eustachian tubes become infected, and even some pilots, apparently normal, have difficulty in ventilating their middle ears during rapid changes of altitude. When no attempt is made during an aeroplane flight to ventilate the middle ear by a voluntary act, there occurs during ascent and at a level of 110 to 180 feet a sensation of fullness in the middle ears; the tympanic membrane begins to bulge. The bulging and the sensation of fullness increase until at a level of about 500 feet there is a sudden click in the middle ear as the membrane springs back to a normal position as a result of escape of air from the middle ear through the Eustachian tube—the excess of pressure in the middle ear has been relieved. This is repeated at certain intervals of time as the ascent continues. During descent atmospheric pressure is being increased and the Eustachian tube, because of its peculiar valve-like action, remains closed regardless of the difference between the pressure in the middle ear and that of the atmosphere. A graphic description of the symptoms present in these circumstances has been given by H. G. Armstrong and J. W. Heim as long ago as 1937.[1] Tinnitus and pain are followed by vertigo and then nausea. Pain increases in severity as descent is continued and pressure increases; deafness is present and vertigo and tinnitus become more severe. Then the tympanic membrane ruptures. The patient feels "as though hit along the side of the head with a plank", there is a loud explosive report in the affected ear, with a sharp piercing pain, and collapse or general shock follows. The labyrinthine wall when examined through the torn membrane is seen to be red, congested and swollen. The traumatic inflammation caused by the differences in pressure was called by Armstrong and Heim *aero-otitis media*. J. E. G. McGibbon has been working on the subject in England and calls it aviation pressure deafness. J. F. Simpson, who is the senior ear, nose and throat specialist of the Royal Air Force, remarked at the Royal Society of Medicine discussion that until the use of pressure suits or sealed cabins in aircraft became universal, the ear and nose would continue to be subjected to pressure changes during climbing and descent. Perhaps it should be stated that at the present time in commercial flying standards have been set up and are followed regarding the rate of ascent and descent, and sometimes instructions are given to passengers regarding swallowing and other methods of deliberate ventilation of the middle ear. Armstrong states that in sleeper aeroplanes it is advisable to awaken passengers every time the aeroplane descends from any considerable altitude in order that their middle ears may not be traumatized. Simpson holds that the main factor of the pain in the ear lies not in the bulging of the drumhead, but probably in the mucosa or bony walls of the cleft. He thinks it doubtful whether pain can be explained merely on the basis of passive congestion and that other and more complex factors probably take part. He adds that a sinister but occasional complication of aero-otitis is a severe and permanent form of deafness of the "nerve or inner ear" type.

J. E. G. McGibbon in his contribution to the discussion said that 26% of the total number of air crew personnel referred to the ear, nose and throat department of the Royal Air Force General Hospital had complained of aural symptoms due to loss of height in aircraft. Of 100 such patients, 31 complained of deafness alone, 55 complained of deafness and pain, five of deafness and tinnitus, three of deafness and vertigo, and six of pain alone. Thus 94 patients complained of deafness. McGibbon is convinced that some degree of deafness is a constant symptom of aero-otitis (or aviation pressure deafness as he prefers to call the condition). None of the patients manifested the severe inner ear type of deafness mentioned by Simpson. In the recovery of the patients McGibbon found that deafness was the last symptom to disappear. He reminds us that the Eustachian tube is opened by swallowing, yawning and gaping movements; that opening may occur during phonation, depending on the amount of

[1] *The Journal of the American Medical Association*, August 7, 1937.

contraction of the pharyngo-nasal sphincter; and that certain physiological factors, such as posture and exercise, influence its patency. If during loss of height ventilation of the middle ear does not take place from any cause, the positive pressure which develops outside the middle ear cleft depends on the amount of height which has been lost and the altitude at which the loss occurs. The cartilaginous and soft membranous walls of the Eustachian tube are pressed together and a potential lumen is made impermeable. This is called by McGibbon primary (pressure) occlusion. This occlusion may be relieved if treatment is adopted within a short time of the onset of symptoms. If forced ventilation of the middle ear is not available or is neglected for one or two hours, the tube becomes impermeable to air even at high pressures, to fluid and to sounds. McGibbon thinks it reasonable to assume that in this condition some biological change has taken place as a result of the primary occlusion. He calls the resulting condition secondary (vital) occlusion. McGibbon states that the nature of the secondary biological changes is not known, but he regards the condition as a very real entity and states that it may take as long as fourteen weeks to resolve.

So far only two subjects have been discussed—the effects of noise and the effects of ascent and descent on the ear. For the present this must suffice and the vestibular reactions towards speed, direction and position are merely mentioned. To discuss them fully would lead to the questions of blind flying, "flying sense" and air-sickness. It will be clear that the ear most likely to stand up to stress either of noise or of variation in atmospheric pressure is the ear that is healthy and belongs to a person who is free from defect of mind or body. For example, McGibbon gives a table setting out the lesions of the upper respiratory tract that he found in the series of 100 patients already mentioned—six suffered from a "cold", 18 had a deviated nasal septum, two had chronic infection of adenoid tissue, seven had chronic tonsillitis, ten had an antral infection, and one a dental lesion; in addition he named several "remote" lesions of the upper respiratory tract. He sums up the position by stating that one-third of the 100 patients suffered from lesions which might have affected the lining of the Eustachian tube. The testing of candidates for aviation is not a simple matter. At the London discussion D. B. Fry explained that the object of testing candidates was twofold—in the first place, candidates had to be selected who were worth training, and care had to be taken that no candidate was rejected who would be in fact capable of carrying out flying duties. Fry pointed out that hearing acuity was not enough, because ability to interpret signals depended both on hearing and on intelligence or ability to guess the right answer. Ability to guess the right answer was largely the outcome of training, but the whole question was further complicated by the conditions in which the candidate would have to work if accepted, and the chief of these was the background of noise. Fry explained the difficulties of testing candidates and said that work was being carried out with the use of a standard flying helmet and gramophone records, in which test words and sentences were spoken against a background of noise. By this means it was also possible to change the ratio of signal to noise and to work on the principle of the gramophone audiometer. This work is apparently not yet complete, and many other problems remain to be solved. Some idea of the matters exercising the minds of those engaged in this study may be gathered from four questions mentioned by Fry:

(1) The importance of training in the reception of transmitted speech. How far can training compensate for defects of hearing (as shown by pure-tone audiometry)?

(2) How much more difficult is it to train a person with defective hearing than one with normal hearing?

(3) What is the effect of monaural deafness on the ability to receive signals? How far is it justifiable to employ in duties involving the use of auditory signals a person who has a gross defect in one ear?

(4) What is the effect of frequency and intensity limitations in the transmission system upon the reception of signals by a person with defective hearing?

Current Comment.

THE IMMEDIATE REPLACEMENT OF AVULSED SOFT TISSUE.

IT is not often that soft tissues torn from the body can be put back into place and survive. When this does happen, the replaced tissue is to all intents and purposes a graft. If recovery takes place it does so because the graft has taken. A successful example of this procedure recently reported by P. H. Jayes[1] is worthy of note. A boy, aged thirteen years, was bitten in the thigh by a horse which tossed him into the air. The boy's mother noticed that tissue was missing from the thigh and found it lying on the ground. She picked it up, put it back into position and bandaged the limb with boracic lint. The boy was admitted to hospital two and a half hours after the accident. Under anæsthesia it was found that skin and subcutaneous tissue had been torn away. The detached portion was lifted off the raw area and washed in saline solution. It was pinned on to a board and all subcutaneous fat was dissected off its deep surface. The raw area was washed with saline solution and hæmostasis was obtained. The skin edges were found to be clean cut as with a scalpel; sulphanilamide powder was sprayed on to it and the graft was sutured in position. Firm pressure was applied and the limb was put on a splint. On the tenth day it was found that 80% of the graft had taken. In cases such as this an attempt should be made to graft the ablated tissue back into place. Healing in this instance was probably aided by the fact that the skin and subcutaneous tissue only were involved. Gentle handling of the graft will be necessary and hæmostasis must be complete.

INDEX TO "THE MEDICAL JOURNAL OF AUSTRALIA".

READERS are reminded that owing to the war-time need for economy in the use of paper the index to THE MEDICAL JOURNAL OF AUSTRALIA for the half-year ended June 27, 1942, was not issued with the journal for that date. It will be published separately within the next few weeks; the date of publication will be announced in these columns. As already stated, copies will be sent to exchange journals, to libraries and to medical and other scientific societies on the regular mailing list. It will be sent post free to any reader who makes application to the Manager at The Printing House, Seamer Street, Glebe, New South Wales. This is the second publication of this notice.

[1] *Proceedings of the Royal Society of Medicine*, March, 1942.

Abstracts from Medical Literature.

PÆDIATRICS.

New Concepts of Gonococcal Vaginitis.

ALFRED COHN, ARTHUR STEER AND ELEANOR L. ADLER (*The Journal of Pediatrics*, January, 1942) present the conclusions of a study in gonococcal vaginitis which has been made for the past three years in various hospitals, clinics and child-caring institutions in New York City. The findings reported by this study seem to justify the following conclusions. Culture is the best method for diagnosis and assessment of cure in gonococcal vaginitis. Sulphathiazole is the most suitable drug for treatment; it cured within one week 87% of the 77 patients treated. The response to chemotherapy is dramatic; all clinical symptoms of discharge, external irritation and inflammation subside rapidly, and smears and cultures become "negative" after twenty-four hours of treatment. Patients with vaginitis who require treatment in hospital may be cared for in general wards with the usual isolation technique which is applied in other communicable diseases. Treated patients may return to schools and institutions as soon as clinical signs have cleared and organisms fail to grow on incubated culture media. Negative findings on monthly examinations over a period of six months following treatment are a satisfactory standard of cure.

Neonatal Thrush.

G. B. LUDLAM AND J. L. HENDERSON (*The Lancet*, January 17, 1942) have made a study of thrush at a maternity hospital, with the object of demonstrating the high incidence of the disease and some of the factors maintaining the endemicity of the infection. The clinical material consisted of 193 infants, and specimens were taken (usually on several occasions) from the hands and mouths by means of swabs and from the fæces. A complete bacteriological search was made for the causative fungus *Monilia albicans*. Routine clinical examination of infants in the hospital revealed a high incidence of thrush; closer observation accompanied by bacteriological examination revealed a much higher incidence. Bottle-fed infants and infants who remained in hospital for longer than usual were affected to a greater extent than others; this fact accounts for the high incidence in premature infants. No evidence was found that local trauma, debility or prematurity *per se* predisposed the infant to thrush. The causal fungus can be isolated several days before the onset of the lesions. It usually persists after the lesions have disappeared; this may be prevented by efficient local treatment. The authors therefore recommend that the patient should be isolated until discharge from hospital, unless examination of swabs fails to reveal the organisms. They point out that *Monilia albicans* can be isolated from the fæces of most infants with oral infection and from the hands of 50% of infected infants. There was no significant relationship between infection of the mother's vagina and infection of the infant. The organism was isolated from the throat of one-third of the nurses and from the fingers of a few. It was also found in a high proportion of specimens of pooled breast milk used for artificially fed infants. Boiling of the milk caused a fall in the incidence of thrush, but it still remained high. The authors consider that three factors are of prime importance in the high incidence of thrush: (i) overcrowding in nurseries, (ii) failure of the present nursing technique to prevent spread from infant to infant, (iii) failure to make an early diagnosis, with resultant delay in isolation of the patient and his treatment. Another factor is the use of unboiled pooled breast milk. Air-borne infection appears to be of little or no importance.

The Application of Tuberculin Tests to Children.

CLEMENT A. SMITH *et alii* (*The New England Journal of Medicine*, December 25, 1941) discuss the results of intradermal (Mantoux) tests with graded doses of "O.T." (old tuberculin) performed on 336 infants and children under thirteen years of age. The same patients were also tested by the patch method. Test doses of less than 0·1 milligramme were less than 85% as accurate as those of 0·1 milligramme (0·1 cubic centimetre of 1 in 1,000 dilution) in revealing tuberculin sensitivity. Doses of 0·1 milligramme were 97% as accurate as those above that amount. The tuberculin patch test gave a positive reaction when applied to 113 (97%) of 116 children who reacted to 0·1 milligramme or less of "O.T." given by the intradermal method. No correlation between tuberculin sensitivity and degree of infection was apparent.

Bronchiectasis in Childhood.

SIDNEY DIAMOND AND EMILY L. VAN LOON (*The Journal of the American Medical Association*, March 7, 1942), with the object of studying in detail the various clinical aspects of bronchiectatic disease in children, selected from among the many hundreds of children examined and treated since 1930 in the bronchoscopic clinic at Temple University Hospital 75 with bronchiectasis and for contrast an equal number with similar symptoms but a normal bronchographic appearance. For the sake of convenience and for want of a better term they designated the condition of the latter group chronic tracheo-bronchitis. While several features of bronchiectasis continue to form the basis for controversial opinions among clinicians and pathologists, the progressive increase in knowledge has made two facts clearly evident. One is that in a large number of patients whose history and physical status formerly would have led to the presumptive clinical diagnosis of bronchiectasis, actual dilatation of the bronchi cannot be demonstrated. The other is that in a great many patients with chronic broncho-pulmonary disease, either bronchiectatic or non-bronchiectatic, the process has its inception in childhood. A positive clinical diagnosis of bronchiectasis can be made only by bronchography. The symptoms as a rule do not reflect the extent of the anatomical damage in the bronchi. The expectoration of noisome sputum in the absence of a suppurative intrapulmonary focus or empyema with a bronchopleural fistula is strongly suggestive of the existence of bronchial dilatations. The same is true in a lesser degree of hæmoptysis. These symptoms offer no clue, however, to the site or severity of the ectasia. There are no physical signs pathognomonic of bronchiectasis. Neither the appearance of the ordinary skiagram of the chest nor the bronchoscopic appearance is conclusive, although changes limited to one side usually point to the presence of unilateral dilatations. The bacteriological picture is altogether non-specific. If the clinician is to be accurate in the determination of the presence and distribution of bronchiectatic changes, therefore, he must rely solely on contrast röntgenography as the basis for the diagnosis. The authors discuss the numerous theories which have been postulated in recent years to explain the development of bronchiectasis, but conclude that in the final analysis the pathogenesis of the disease remains obscure. When the cause and the evolution of bronchiectasis become more fully understood physicians will perhaps be able to cope with the diesase prophylactically on a purely rational basis. Until then efforts in that direction must of necessity be largely empirical. It is known that bronchial dilatations are often associated with paranasal sinusitis, with chronic bronchial infection, with atelectasis and with parenchymatous pulmonary lesions. If bronchiectasis is a preventible disease elimination of these disorders may be effective in precluding its development. From the early childhood of the patient, therefore, careful attention should be given to the correction of structural deformities in the nasal chambers which may predispose to the inauguration or to the perpetuation of inflammatory lesions. Therapy administered for an acute infection of the nose, sinuses, tonsils, bronchi or lungs should be adequate to ensure the patient's complete recovery. If the infection is chronic when the patient is first encountered, proper measures for bringing it under control should be undertaken. The patency of the air passages should be assured at all times with bronchoscopic aid if necessary. The authors state that symptomatic benefits resulting from conservative therapy in bronchiectatic children lose much of their significance when it is realized that in not a single instance in the authors' series did they represent an anatomical cure. Because of the decided tendency toward subjective exacerbations and remissions, the prognosis in bronchiectatic disease is most uncertain and early improvement is often short lived. The outlook without operative intervention is exceedingly dark. If the indications for lobectomy exist, therefore, the operation should whenever possible be performed in childhood, before the disease has begun to make serious inroads into the patient's health. In the light of our present knowledge it may not be possible to prevent the occurrence of bronchial dilatations, but by early accurate diagnosis and judicious surgical intervention a large number of bronchiectatic children can be saved from a life of invalidism and perhaps from a premature death.

The Significance of Rheumatic Nodules in Childhood.

R. R. STRUTHERS AND H. L. BACAL (*Canadian Medical Association Journal*, April, 1942) discuss the value of the presence of rheumatic nodules in determining the future course of children with rheumatic disease. Thirty-eight examples of the manifestation known as the rheumatic nodule were found in the study of 464 admissions

to the rheumatism service of the Children's Memorial Hospital, Montreal, during the years 1933 to 1940 inclusive. The presence or absence of associated cardiac disease and its probable severity are discussed. From this it would seem that the appearance of rheumatic nodules in a child suffering from rheumatic infection suggests that the particular rheumatic incident in the life-long infection is possibly subsiding, but that the prognosis is of eventual severe cardiac disease and a grave outlook. The finding of nine cases of *erythema multiforme* in this same group of patients and eight associated with a severe degree of heart disease would on the basis of this very limited experience suggest also a serious prognosis.

ORTHOPÆDIC SURGERY.

Injuries of the Internal Semilunar Cartilage.

EDWARD K. CRAVENER AND DONALD G. MACELVY (*The Journal of the American Medical Association*, November 15, 1941) discuss possible predisposing causes, symptoms and treatment of medial meniscus injuries. Six theories concerning the function of the menisci are postulated: (*a*) They act as a row of ball bearings to facilitate rotation of the knee in the "locking home" process of full extension. (*b*) They may serve as a cushion between the bone ends. (*c*) They form a wedge to compensate for the incongruity which exists between the ends of the femur and tibia. This may be valuable in protecting the knee against lateral blows. (*d*) The menisci may form a chock between the bone ends, preventing undue forward movements of the femur on the tibia. (*e*) The internal semilunar cartilage may equalize intra-articular pressure by its movement inwards or outwards according to the pressure applied. (*f*) The cartilages may act as a "Mitchell pad", applying a layer of synovial fluid in their migrations. The medial meniscus may be injured by a blow on the outer side of the knee, causing a medial shift of the cartilage, a portion remaining fixed between tibial head and femoral condyle. A common cause of injury is rotation in flexion of the tibia with the femur fixed. The reverse of this process may also cause injury. In the writers' series of cases the bucket-handle type of injury occurred in 30% of cases; in 20·75% a simple tear into the anterior crucial ligament was combined with forward dislocation of the meniscus. In 18·8% the bifurcation between the transverse ligament attachment and the anterior cruciate ligament was elongated to form an anterior tear. Slightly less than half of all injuries occurred in the avascular portion of the cartilage. The remainder occurred towards the vascular periphery of the meniscus. Tears of the vascular area may repair by scar tissue whereas those in the medial bloodless area are predestined to non-union. Of symptoms, the most common are pain, instability of the joint, or a feeling of "giving way" and swelling of the knee. The chief diagnostic signs are pain on external rotation of the leg with the knee flexed, tenderness exactly over the joint line and limitation of movement. Locking occurs in only 30% of patients. From a study of 1,700 cases the authors have found that the average age of patients with cartilage injury is twenty-nine years. The treatment advised is first a plaster cast applied for six weeks followed by exercises. This conservative method is adopted because of the likelihood of repair by scar tissue in the 55% of injuries which occur in the vascular area. Removal of the meniscus is recommended if two further attacks occur after the patient has returned to work. Two incisions, an anterior and a posterior, are used to ensure the minimum of trauma to the articular cartilage.

An Operation for Recurrent Dislocation of the Shoulder.

STEPHEN WAHL (*Annals of Surgery*, March, 1942) describes his operative technique for the treatment of recurrent dislocation of the shoulder. A three-inch longitudinal skin incision is made, beginning just below the medial border of the acromion process and overlying the bicipital groove. The deltoid muscle is split longitudinally by blunt dissection, and if the bicipital groove does not appear in the operative field it can be brought into view by external or internal rotation of the arm. The sheath of the long head of the biceps is incised and the tendon is freed from the sulcus. Strong silk sutures are placed about one inch above the muscular portion of the long head of the biceps, to fix the tendon to the periosteum; the forearm is held in 45° of flexion during this procedure. A stay suture is inserted immediately above the fixation sutures. The tendon is cut below the stay suture and is lifted out of the bicipital groove. A drill hole, one-half to three-quarters of an inch in depth, is made from the bicipital groove through the greater tuberosity. The free end of the cut tendon is scarified and threaded through this channel, the arm being held in 45° of abduction. The tendon is then fixed to the periosteum and the surrounding tissues with strong silk sutures. The wound is closed. The limb is immobilized in a plaster of Paris spica in a position of 45° of abduction or in a Velpeau bandage; it is kept immobilized for three weeks. When the bandage is removed the range of motion of the joint is usually complete. Physical therapy is given for several weeks. The author states that the procedure has been used in a total of 31 cases by himself and by other surgeons; 28 of the patients have been observed over periods varying from two to six years, and only one has had a recurrence of the dislocation.

The Treatment of Fracture of the Patella.

J. E. M. THOMSON (*Surgery, Gynecology and Obstetrics*, April, 1942) presents an evaluation of the results of treatment of fractured patella by the method which he recommended some years earlier. The results are those obtained by himself and by other surgeons in a total of 554 cases. The author states that no form of treatment is to be recommended if it fails to restore the normal functional integrity of the knee whenever this is possible. An exception is excision of the patella, which is required in three sets of circumstances: (i) in severely comminuted fractures, in which there is no suitable fragment to which to anchor the opposing tendon; (ii) in severe compound fractures, in which surgical treatment is delayed and in which infection is a potential complication; (iii) in the presence of degenerative arthritis. Excision of the patella should be regarded as a "reserve procedure" when the restoration of the normal integrity of the knee joint is impossible. The technique employed by the author consists in plastic tendon repair and removal of loose fragments of bone, a single attached fragment only being left. This fragment may form either the distal or the proximal pole of the patella, and the opposing patellar tendon is sutured to and through the fragment. He considers that treatment on these principles offers the most satisfactory solution of the problem; it restores the cosmetic functional integrity and protective mechanism necessary to the normal knee. By treatment along these lines no attempt is made to obtain union between fragments of bone that have little osteogenic property; union of soft tissue only is involved, and neither the fulcrum stability of the patella nor buffer protection to the exposed condyles of the femur is lost. The period and amount of disability are reduced. The author discusses in detail the operative technique and after-care of the patient.

A Simple Procedure for Stabilization of the Knee Joint.

H. C. BLAIR (*Surgery, Gynecology and Obstetrics*, April, 1942) discusses stabilizing operations on the knee joint and describes in detail a procedure which he has used with success and which eliminates the necessity to open the joint. The operation is based on Testut's observation that movement of the knee joint is centred in the posterior portion of the femoral condyles. By the superimposition of skiagrams taken with the knee in extension and at different angles of flexion, an almost stationary point is localized in the centre of the ring formed by the extension of the arc made by the posterior and inferior portions of the femoral condyles. Theoretically this point remains at a constant distance from any fixed point in the tibia during flexion and extension of the knee joint. A strip of fascia, applied so as to cross the fixed point, therefore remains at the same degree of tension whether the knee is extended or in any degree of flexion. The author has found that his operation, based on this principle, gives good functional results under adverse conditions. Describing the technique, he states that the first step is the removal from the *fascia lata* of the opposite leg of a strip of fascia, about 12 inches long and one inch wide; a stripper is not used. The fascia is cut into four strips, each about half an inch wide and six inches long. The first strip is fixed so that it passes from the head of the fibula to the tendinous expansion of the suprapatellar tendon. The second strip passes from the deep fascia on the antero-lateral surface of the tibia to the fascia and some of the fibres of the biceps muscle. The two strips cross on a level with the fixed point in the femoral condyle. On the medial side the third fascial strip passes between a point on the postero-medial border of the tibia and a point just medial to the superior pole of the patella. The fourth strip passes from a point on the antero-medial border of the tibia to the fascia overlying the hamstring muscles. After operation the patient wears a non-padded walking case extending from groin to toes for a period of two weeks. After this fixation gradually becomes lessened and flexion is allowed to increase during a period of two or three months.

The Royal Australasian College of Physicians.

ANNUAL MEETING.

THE fourth annual meeting of the Royal Australasian College of Physicians was held at Melbourne in the building of the Royal Australasian College of Surgeons on Friday and Saturday, May 1 and 2, 1942. At this meeting the new office bearers for 1942-1944 took office. They are as follow: *President*: Colonel Sir Trent Champion de Crespigny; *Vice-Presidents*: Dr. H. J. Ritchie, Colonel C. H. Kellaway, Dr. T. W. J. Johnson (New Zealand); *Censor-in-Chief*: Lieutenant-Colonel S. O. Cowen; *Honorary Secretary*: Lieutenant-Colonel Allan S. Walker; *Honorary Treasurer*: Dr. S. A. Smith; *Acting Honorary Secretary*: Dr. A. H. Tebbutt. The Councillors of the College are as follow: Lieutenant-Colonel J. G. Haden, Dr. Konrad Hiller, Dr. A. W. Holmes à Court, Dr. F. S. Hone, Colonel C. H. Kellaway, Dr. L. S. Latham, Lieutenant-Colonel C. G. McDonald, Dr. Alex Murphy, Dr. H. J. Ritchie, Dr. M. D. Silberberg, Dr. A. H. Tebbutt, Dr. A. E. Rowden White. Substitute Councillors are: Dr. O. A. Diethelm, Dr. F. J. Niall, Dr. G. C. Willcocks. Sir Charles Bickerton Blackburn is coopted member of Council.

Professor D. H. K. Lee, of Brisbane, was admitted *in absentia* to Fellowship of the College. Dr. Isabel Williams, of Tasmania, was admitted *in absentia* to Membership. The Margaret Ryan Medal was presented to Dr. John Billings, of Melbourne, winner of the Margaret Ryan Scholarship in Medicine for 1941.

A National Medical Service.

On May 1 a discussion took place on the plan for a national medical service put forward provisionally by the National Health and Medical Research Council. At the request of the President, the Council's decisions in regard to this matter were outlined by Dr. S. V. Sewell. The Council considered that the Royal Australasian College of Physicians should deal only with those sections of the scheme which would affect its own Fellows and Members, and had decided that a subcommittee should be appointed in each State of the Commonwealth to formulate opinions on the plan. Two of the three members of each subcommittee would be under forty-five years of age, as the proposed medical service would most affect the younger men of the profession. The President, Sir Trent de Crespigny, Dr. S. V. Sewell, Dr. Boyd Graham, Dr. J. B. McMiken, Dr. Addie Walker, Dr. Blois Lawton and others contributed to the discussion.

Scientific Session.

Physiology and Functional Cardiac Disorders.

PROFESSOR R. D. WRIGHT read a paper entitled "Some Aspects of the Applied Physiology of Functional Cardiac Disorders" (see page 37).

Hyperventilation.

DR. M. D. SILBERBERG read a paper entitled "Hyperventilation and Allied States" (see page 38).

The Effort Syndrome.

DR. C. H. FITTS read a paper entitled "The Effort Syndrome" (see page 41).

Discussion.

MAJOR RALPH WHISHAW said that his contribution to the discussion would consist of a résumé of the types of neuroses seen, the difficulties encountered, the methods employed in treatment and the results achieved, at a clinic established at the First Australian Convalescent Depot, Palestine, in June, 1941. In the first four months 550 patients were examined. It soon became apparent that, apart from eleven men suffering from psychosis, it was best to group them all under the term "anxiety state", because the emotional breakdown was always the initial and outstanding characteristic. Concentration on symptoms from one organ (for example, stomach, heart or brain) could then be minimized. All types of patient received the same treatment. The symptoms common to all the patients were the following: loss of weight and appetite, tremulousness, tachycardia and sleeplessness. Men complaining chiefly of symptoms relating to the stomach (functional dyspepsia) or heart (effort syndrome) had almost invariably been treated for some weeks in hospitals—the inference being that such diagnoses were "doctor made". Functional dyspepsia was the more common, effort syndrome being comparatively rare. The post-concussion syndrome was also fairly common, as well as various hysterical conversions. A type previously described simulating Parkinsonism was seen quite often. The functional dyspepsias were easily distinguished from peptic ulcer when the patients were examined early, as the discomfort was, when analysed, chiefly a feeling of apprehension in the region of the solar plexus, accompanied by nausea and sometimes vomiting, and by the other signs of the anxiety state—the solar syndrome. Actually, peptic ulcer was found in 1% of cases only.

Major Whishaw went on to say that it became at once apparent that the mixing of psychoneurotics and men convalescing from physical illnesses was detrimental. The former were objects of mirth to the latter, and the neurotics were bad for the morale of the convalescents. They did better when segregated. Interference by the army, especially the accusation of malingering, and attempts to cure neurotics by harsh means and regulations were harmful. Malingering actually occurred in barely 1% of cases. Access to wet canteens was harmful. Too long a stay in hospital was detrimental. The more the army and hospital atmosphere could be eliminated, the quicker was the progress of the patients. Precautions had to be taken to stop "epidemics" of various symptoms—for example, requests for compassionate leave, attempts to be sent home *et cetera*. It was found that the units whose morale was highest seldom evacuated any men with neurosis. Much seemed to depend on the officers and the regimental medical officer. Best results were obtained when the clinic was small. Major Whishaw considered that interviews should be full, but not too frequent, and that no medical officer should attempt to treat more than 50 to 60 patients.

With regard to treatment, Major Whishaw said that it was divided into two types: (i) psychotherapy, (ii) occupational and physical therapy. The first type was of the simplest. A full history was taken, including a brief review of school and home life and army life, and the circumstances of the onset of the illness. A physical examination was then made, followed by strong reassurance, backed up by simple but adequate explanation of the effects of fear and how it caused physical symptoms, and of the reason for the continuance of the anxiety and the symptoms. The effects of fear were most often (i) fear of being sent back to the front before cure, (ii) fear of insanity, (iii) fear of physical illness. Attempts were made to adjust misfits in units, to help in some worries *et cetera*, and conflicts between self-preservation and duty were explained, together with the conditional reflex caused by noise *et cetera*. Sedatives were used freely to obtain sleep in the first two or three weeks of treatment.

With regard to the second type of treatment, a club was formed, which the men named the "Harmony Club". The objects of this were to give the men recreation and to create an "atmosphere of cure". Six men were selected to act as assistants, each being a specialist. These men became keen and were retained after they themselves had been cured. Each started a school of instruction and helped to draft new patients into the branch in which they were most interested. Schools were started in carpentry, engineering, signwriting, cooking, arts and crafts. In addition, competition in games was instituted, a cricket club was formed, and a debating society, a concert party, a life-saving team and "P.T." class were organized. The products of the cooking class were used to tempt new patients, who invariably had no appetite. In the club the men were thus able to observe their companions recovering, and this had an excellent moral effect. The concerts, arranged by the patients themselves, were particularly valuable, for besides music, sketches were given and much amusement was created. The patients in charge of the schools rendered invaluable assistance. Major Whishaw added that he could not speak too highly of the extraordinarily good work done by Chaplain H. Norman in the early months before Lieutenant-Colonel W. S. Dawson took over, and of the later work of Captain A. Sinclair and Captain G. Murphy.

Major Whishaw said that the results depended chiefly on five factors: (i) the personality of the patients, most of whom had had previous breakdowns; (ii) the length of time elapsing before treatment began; (iii) the personal enthusiasm of the medical officers; (iv) the enthusiasm of those in charge of the occupational school; (v) the removal of the treatment centre as much as possible from hospital and army atmosphere. Of the first 550 patients passing through the clinic, 50% were discharged to units, 38% were discharged to "B" class jobs, and 12% (including 11 psychotics) were regarded as unfit for service. In conclusion, Major Whishaw said that there were 2% of relapses in the first six months, and that no doubt more would have been encountered had the affected men been in action again.

MAJOR H. R. LOVE thanked the President and the Fellows and Members of the College for the opportunity of being present and listening to an intensely interesting group of papers. He had had an opportunity of seeing about 180 nervous casualties under field ambulance conditions during 1941. Of these, only four could be considered as suffering from classical effort syndrome, and it was obvious and outstanding that their condition simply formed part of a general syndrome of fear or anxiety states. In the general symptomatology of acute fear states seen in war, nervousness, insomnia, anorexia and sense of exhaustion, together with depression, were almost universal; but the patients might easily be split into artificial groups depending upon whether their main symptoms were voluntary muscular, gastro-intestinal, emotional or, as in the case of effort syndrome, cardio-respiratory.

Major Love went on to say that Cannon had shown the function of the sympathetic-adrenal mechanism in the animal reaction to pain, cold or danger, and Paul Wood's Goulstonian Lectures on Da Costa's syndrome had lately established the emotional basis of the effort syndrome. There were, as Professor Wright had said, symptoms of anxiety states which were not so much sympathetic as parasympathetic in origin, and to these might belong the loss of bowel and bladder control which sometimes occurred. In addition, such secondary effects as might follow prolonged adrenal stimulation, glycogenolysis, over-breathing, anorexia and insomnia, might have a part in symptom production. Major Love had seen one patient at least suffering from frank tetany with carpo-pedal spasm following enemy air activity; the condition must have been due to hyperventilation under the fear stimulus.

Major Love strongly agreed with Dr. Fitts that the education and work, not only of regimental medical officers, but also of combatant officers, must be a tremendous factor in the elimination of such casualties. It appeared that fear and anxiety states might be best considered as over-action or dysfunction of a biologically purposive autonomic reflex, influenced both by the congenital make-up of the individual and by the various conditionings to which this reflex might be subjected under battle conditions, through the cortical-hypothalamic tracts. Two of the outstanding and puzzling symptoms encountered were the muscular exhaustion and the depression which was almost invariably present. Major Love asked Professor Wright whether he could suggest any physiological grounds for these symptoms, and also whether, in acute fear and anxiety states as a whole, any particular drugs might be expected to alleviate symptoms and to restore patients to an efficient bodily and mental state.

CAPTAIN A. J. M. SINCLAIR described patients suffering from war neurosis seen in the psychiatric section of an Australian General Hospital in Tobruk. He said that these soldiers rarely complained of symptoms referable to the heart. This might have been due to the fact that with the high development of mechanization in the present war compared with the last, the stress of marching was so much less that troops had not the same opportunity of expressing emotional conflict in terms of dyspnœa and precordial pain. However, in contrast to this finding, dyspepsia and psychogenic vomiting ranked much more prominently in this war as somatic equivalents of anxiety. The greatest percentage of psychiatric casualties seen in Tobruk admitted frank fear, together with a considerable sense of guilt in many cases that they should be afraid. Captain Sinclair said that an important point of psychotherapeutic procedure in these cases was to impress upon the patient that a state of fear during bombing stress was almost universal in the Tobruk area, and that by self-discipline and expression of this fear in helpful and well-applied purposive outlet a soldier could remain useful and well adjusted. Examples for the patients were readily found, even in the psychiatric centre, of men who had earned decorations, who, both before and during the particular act of bravery, admitted fear. Fear, therefore, was admitted as a normal emotional response present alike in animals and in men.

Captain Sinclair went on to say that the results of treatment in the area were that 61% of men admitted to the clinic were returned to front line duty in the area and, as far as could be ascertained, remained there for periods of two months or longer. Captain Sinclair stressed the fact that the picture presented by the cases in Tobruk differed considerably from that seen at the psychiatric centre in Palestine, where a number of the Tobruk casualties were seen for a second time. Whereas originally the soldier admitted that a state of fear was his main trouble, after he had progressed down a long line of medical evacuations necessitating stay in perhaps more than one general hospital, and after repeated physical examinations and other more specialized procedures had been performed, the initial picture of fear was absent from the consciousness of the patient and in its place had arisen a number of somatic equivalents that were diverse and much more difficult to treat. Other considerations, such as application for return to Australia on compassionate grounds, entered the picture. Domestic maladjustments not previously mentioned during the history taking whilst the patient was near the front line were referred to by the patient. It seemed, therefore, that men with war neurosis were best treated well forward in a divisional area, in order to avoid somatic fixation. An arbitrary distinction was made in the Tobruk centre between fear states and anxiety states. Whilst it was admitted that this distinction had flaws and inconsistencies from a psychiatric point of view, the distinction was made in order to distinguish patients who, when first examined, presented no more than a picture of frank and admitted fear. The other patients labelled as suffering from anxiety states had even at the first interview somatic equivalents.

Referring to the diagnostic label of fear state or anxiety state, Captain Sinclair said that he thought these names were preferable to the terms "shell shock", "bomb blast", "neurasthenia" or others that had been applied. Terms such as the last mentioned, which gave a suggestion to the patient that his symptoms were due to a physical injury or illness, laid an emphasis on the somatic equivalents that tended to prolong the disability.

Captain Sinclair then briefly described experiences of work at the psychiatric centre in Palestine. The original work done by Major Whishaw in organizing this clinic was an amazing single-handed feat in the Australian Army Medical Corps. The occupational therapy facilities initiated by Major Whishaw were increased as time went on and were a most valuable adjunct to treatment.

Captain Sinclair then referred briefly to the interesting condition of hyperventilation discussed by Dr. Silberberg. He had seen patients under the care of Dr. Sargent in London who presented hyperventilation as an initial and possibly exciting factor in acute anxiety states. Some of these cases could be aborted by encouraging the patient to close his mouth and hold his nose at the onset of the attacks. Hyperventilation had been used as a method of inducing hypnotic states. The few experiences of using this method in Palestine had induced in the subjects typical anxiety hysteria with trembling, sweating, and in one case an hysterical seizure.

Correspondence.

HYPERTENSION.

SIR: There may be some who think that it is not becoming for a surgeon to intrude upon a discussion on hypertension. However, recent surgical literature is profusely sprinkled with accounts given of fruitful efforts made at surgical clinics to give relief to sufferers and there are grounds for hope that the surgeon will soon play his part with the physician as he already has done in the treatment of "typhlitis" and hyperthyreoidism. Actually it is the duty of the surgeon (and of the practitioner) to know that something can be hoped for from surgery. At present the methods available to the surgeon are: (i) splanchnicectomy, an operation which, by Peet's method, is no more grave than a thoracotomy for empyema; (ii) the correction of mechanical obstacles to renal functioning; (iii) the removal of those gross foci of infection which may add to the burden of the already burdened kidney.

With regard to foci of infection, six cases which have come under my observation in the last few years have shown the improvement in health and sometimes in actual blood pressure readings, which may follow the removal of infective foci. Perhaps Goldblatt's experiments provide an explanation for some of these cases. Perhaps the focus of infection acting over many years damages the kidney and hypertension results or is aggravated. Of course, many have foci of infection without hypertension, just as many get scarlet fever without nephritis.

But at this point Dr. B. T. Shallard steps in and quotes Professor Innominatus: "focal sepsis has never been conclusively shown to produce anything but focal sepsis". This statement of the Professor's is hard to understand, and suggests the following questions:

1. Why should acute infections (for example, in the pharynx) produce pains and aches and tissue damage in distant parts, and a more long-standing chronic pharyngeal infection produce no effects?

2. Why do so many patients report an improvement in their general health, and a disappearance of distant pains and aches after the removal of a focus of infection?

3. Why should not the blood vessels and the renal tissue share in the general increase in well-being, after the removal of a focus of infection? Does not the body (organs, tissues, cells and fluid matrix) function as a whole? Is not damage to the blood vessels and to the kidney a factor in hypertension? See Goldblatt.

4. How explain (*a*) the excretion of bacteria by the healthy kidney, (*b*) the ætiology of recurrent pyelonephritis due to *Bacillus coli*, in the absence of a gross anatomical lesion of the renal tract, (*c*) the ætiology of "renal carbuncle" and (*d*) of osteomyelitis and (*e*) the sequelæ and complications of the acute infections generally?

The necessity for this letter was borne in upon me by the complaint of a very intelligent resident medical officer, who spoke of the boredom of medical out-patients—"mostly just hypertensives and repeating mixtures". He lacked the spark of inspiration which he may have got from Goldblatt and others. But now, after some fatherly advice, when he finds that he can squeeze pus from the tonsils of his patients, he will carefully and objectively consider the possibility of interrelationship with their ill health, and he will relegate to their proper place statistics and guinea-pigs, and he will not neglect the study and care of his patient merely because the bacteriologist scoffs at things which he does not as yet understand.

Yours, etc.,

V. J. KINSELLA.

235, Macquarie Street,
Sydney,
July 1, 1942.

MALARIA.

SIR: The discussion in Adelaide on malaria was interesting, especially to those who saw hundreds of cases in the Middle East in 1914-1918.

The discussion naturally turned on the benign form, which is apt to be recurrent. In the last campaign all such cases were put to work in garrison battalions or in units on the line of communications.

A small detention hospital was established in every such unit, and when a relapse occurred the soldier was at once admitted to hospital. When the attack was over he was sent to work again. This procedure proved highly satisfactory.

Malignant malaria, especially as seen in Jerusalem, was quite another matter. The Germans called it the autumn disease, probably because as the nights became colder the mosquitoes took refuge in the houses. The use of quinine as a prophylactic except in certain emergencies was not favoured. Whether opinion has changed in that respect I do not know.

The intramuscular injections of quinine are apt, under war conditions, to cause large abscesses. During the period which culminated in the battle of Megiddo, instructions were to give any soldier entering a forward station quinine if he had a temperature from any cause. If treatment was delayed until certainty was established it was sometimes too late. Most of such cases were of the malignant type, which has to be seen to be appreciated.

Yours, etc.,

JAMES W. BARRETT.

105, Collins Street,
Melbourne,
July 4, 1942.

ANÆSTHESIA AND DENTAL SURGERY.

SIR: An experience of some years as a general dental practitioner before graduating in medicine has prompted me to comment on your editorial of June 27.

In the main I am in agreement with the opinions expressed, but I think that further clarification of the position is needed.

1. Local *versus* general anæsthesia. I agree that regional anæsthesia is as a rule the safest and most satisfactory method.

The main exceptions to this rule are:

(*a*) Young children, who are often terrified by any operative procedure done under local anæsthesia, however free from pain.

(*b*) Very nervous adults. (Quite often these are patients who have been badly handled as children.)

(*c*) Some acute inflammatory conditions in the mouth, where even regional anæsthesia may not be very effective or desirable (for example, acute alveolar abscess).

(*d*) Cases where the patient's time is very limited and where the mouth must be cleaned up as speedily as possible.

(*e*) Some cases of badly impacted teeth and other extensive operations involving the cutting of bone.

2. Turning to the actual administration of general anæsthetics in dental cases, I would make the following points:

(*a*) Very light open ethyl chloride or ether is suitable for short dental operations, such as the extraction of deciduous teeth in children or one or two easy extractions for adults where local anæsthesia is contraindicated, or for opening an abscess *et cetera*. It is desirable that the cough reflex should not be abolished or its return should coincide with the completion of the operation.

(*b*) Gas and oxygen is a suitable anæsthetic for cases where operative difficulty is not expected. Every anæsthetist should know that certain types of patient are not good subjects for gas and oxygen. Special mouth packs are necessary, the mouth being almost filled with cotton wool or gauze, which is pushed aside by the forceps or fingers as each area as dealt with.

(*c*) For prolonged anæsthesia in any sort of oral operation endotracheal ether is strongly desirable, the pharynx being properly packed. Endopharyngeal ether is a compromise which, in my opinion, should be used only in cases where difficulty is not expected and the need for prolonged anæsthesia is unlikely.

(*d*) *Re* positions for administration. For reasons which cannot be discussed here, gas and oxygen is better given in the upright position. The other types of general anæsthetic should be given with the patient supine or nearly supine. Much of the dental surgeon's difficulty in working under general anæsthesia and in the supine position will vanish if he acquires ambidexterity and uses a headlight.

Yours, etc.,

W. E. FLEMING, M.B., B.S., D.D.Sc.

61, Collins Street,
Melbourne,
June 30, 1942.

RADIOLOGICAL SURVEY OF CHILDREN'S CHESTS FOR TUBERCULOSIS.

SIR: The members of this Association of Radiologists of Australia and New Zealand wish to draw attention to the recent publicity in the daily Press in regard to a proposed radiological survey of the chests of children for tuberculosis. Such a survey would be of no value in the diagnosis of tuberculosis and would give an erroneous impression of the incidence of this disease in children. There are numerous pulmonary conditions in children which are indistinguishable, radiologically, from tuberculosis. The diagnosis of childhood tuberculosis is a matter for the physician, assisted in very small part by the radiologist.

The wholesale diagnosis of tuberculosis in children because of slight departure from the normal markings in the X-ray film would lead to endless and needless parental worry and would place a lifelong stigma on a healthy child. Furthermore, it would be a serious matter to place such a child in an institution with sufferers from tuberculosis, as such contact would lead to infection.

The officials suggesting this procedure have evidently been misled by the success of surveys in the adult, where tubercular deposits give a fairly clear-cut picture. The members of this association therefore hope that public funds will not be wasted on this valueless procedure.

Yours, etc.,

D. G. MAITLAND,
Acting Honorary Secretary, Australian and New Zealand Association of Radiologists.

135, Macquarie Street,
Sydney,
July 6, 1942.

Naval, Military and Air Force.

APPOINTMENTS.

THE undermentioned appointments, changes *et cetera* have been promulgated in the *Commonwealth of Australia Gazette*, Number 183, of July 2, 1942.

AUSTRALIAN IMPERIAL FORCE.

Australian Army Medical Corps.

The undermentioned are appointed to units of the Australian Imperial Force as from the dates and in the ranks indicated:

To be Captains.—Olaf McClure Spence, 12th January, 1942; Hugh Collis Barry, 13th January, 1942; Frederick William Connaughton, 30th January, 1942; Richard Dyason Ferris, 1st April, 1942; and John Russell Barbour, 9th April, 1942.

The following changes *et cetera* are made:

Major VX39691 D. H. Mitchell is placed upon a Regimental Supernumerary List, 1st October, 1941.

The regimental seniority of Captain NX109 R. F. A. Becke is in accordance with his Army seniority.

AUSTRALIAN MILITARY FORCES.

Australian Army Medical Corps.

The provisional appointment of Captain J. V. Champian is confirmed.

The following officers are transferred: Captains (provisionally) N176074 D. J. Passmore, 10th April, 1942, Q107724 E. N. Kurrle and Q124799 R. C. Dent, 1st May, 1942; and Captain (Temporary Major) S. S. Roseberry and retains the temporary rank of Major, 12th May, 1942.

The following officers are transferred to the Reserve of Officers: Major J. S. Smyth, 13th February, 1942; and Captains (provisionally) E. Bruce-Smith and V270161 K. D. Anderson and to be Honorary Captains, 13th February, 1942, and 20th May, 1942, respectively.

The resignation of Captain (provisionally) J. M. Barrett of his commission is accepted, 8th March, 1942.

Captain (provisionally) J. C. Mullany is retired, 26th May, 1942.

The notification respecting the appointment of Captain (provisionally) E. D. M. Ryan which appeared in Executive Minute No. 207/1941, promulgated in *Commonwealth Gazette* No. 239 of 1941, is withdrawn.

Captain C. H. B. Adamson is appointed from the Reserve of Officers, 13th March, 1942.

The following officers are appointed from the Reserve of Officers and to be Captains (provisionally): Honorary Captains H. V. Francis, 10th April, 1942; N392901 C. F. A. De Monchaux, 26th April, 1942; N3403 A. M. B. Grant, 13th May, 1942; and K. E. Harrison, 19th May, 1942.

To be Majors (temporarily).—Captains (provisionally) S. E. Holder, 17th May, 1942; and T393 R. A. Lewis, 27th May, 1942.

To be Captain (provisionally).—Neville Francis Babbage, 30th May, 1942.

The resignations of Honorary Captains H. E. Williams and B. W. Costello of their commissions are accepted, 20th April, 1942, and 2nd May, 1942, respectively.

To be Honorary Captains.—Alexander Francis Taylor, 21st May, 1942; Timothy John Cotter, 25th May, 1942; and Henry William Fitzpatrick, 27th May, 1942.

ROYAL AUSTRALIAN AIR FORCE.

Citizen Air Force: Medical Branch.

Temporary Wing Commander W. D. Counsell (1164) is granted the acting rank of Group Captain whilst employed as a Group Captain with effect from 1st January, 1942.—(Ex. Min. No. 86—Aproved 1st July, 1942.)

The following temporary Flight Lieutenants are granted the acting rank of Squadron Leader whilst employed as Squadron Leaders with effect from the dates indicated: R. W. D. Fisher (1203), 1st February, 1942; E. S. Peters (1207), 6th February, 1942.—(Ex. Min. No. 87—Approved 1st July, 1942.)

CASUALTIES.

ACCORDING to the casualty list received on July 6, 1942, Major G. E. Jose, A.A.M.C., Woodville, South Australia, Major S. Krantz, A.A.M.C., Adelaide, South Australia, Major E. A. Rogers, A.A.M.C., Hobart, Tasmania, Captain S. T. Simpson, A.A.M.C., Brisbane, Queensland, Lieutenant-Colonel R. M. W. Webster, A.A.M.C., Campbell Town, Tasmania, and Captain A. J. M. White, A.A.M.C., Hobart, Tasmania, are reported missing abroad.

According to the casualty list received on July 7, 1942, Major H. L. Andrews, A.A.M.C., Murchison, Victoria, Captain I. C. Heinz, A.A.M.C., South Yarra, Victoria, Captain G. J. Horder, A.A.M.C., Malvern, Victoria, and Major A. F. Hobbs, A.A.M.C., Fitzroy, South Australia, are reported to be missing abroad, and Captain E. J. I. Watt, A.A.M.C., Launceston, Tasmania, is reported to be missing, believed prisoner of war.

According to the casualty list received on July 9, 1942, Captain W. Dixon, A.A.M.C., Elwood, Victoria, Captain E. B. Dreverman, A.A.M.C., Armadale, Victoria, Captain W. J. K. Treleaven, A.A.M.C., Melbourne, Victoria, and Captain M. F. A. Woodruff, A.A.M.C., Kew, Victoria, are reported to be missing overseas.

According to the casualty list received on July 10, 1942, Major A. R. Home, A.A.M.C., Albany, Western Australia, Captain J. E. Throssell, A.A.M.C., Mount Hawthorn, Western Australia, Captain F. W. S. Finch, A.A.M.C., Mount Lawley, Western Australia, and Major B. W. Nairn, A.A.M.C., Perth, Western Australia, are reported to be missing overseas.

According to the casualty list received on July 10, 1942, Major R. G. M. Forsyth, A.A.M.C., Burnley, Victoria, Captain J. L. Frew, A.A.M.C., Toorak, Victoria, Major R. B. Maynard, A.A.M.C., Newport, Victoria, Captain P. N. O'Donnell, A.A.M.C., Melbourne, Victoria, Major R. G. Orr, A.A.M.C., Toorak, Victoria, Major C. H. Osborn, A.A.M.C., Toorak, Victoria, Captain F. R. Vincent, A.A.M.C., Frankston, Victoria, Major H. A. W. Watson, A.A.M.C., East St. Kilda, Victoria, Colonel E. R. White, A.A.M.C., Toorak, Victoria, and Captain J. Scollin, A.A.M.C., Toorak, South Australia (*sic*), are reported to be missing abroad.

According to the casualty list received on July 13, 1942, Captain D. J. Brennan, A.A.M.C., Sydney, New South Wales, is reported to be missing abroad.

Australian Medical Board Proceedings.

QUEENSLAND.

THE undermentioned have been registered, pursuant to the provisions of *The Medical Acts, 1939 to 1940*, of Queensland, as duly qualified medical practitioners:

Behan, Norman Gregory Joseph, M.B., B.S., 1942 (Univ. Queensland), Belmont Crescent, Bardon, W.4.

Cowlishaw, Frank Haig, M.B., B.S., 1942 (Univ. Queensland), Westbourne Street, Highgate Hill, S.1.

Georgesen, Walter Selwyn, M.B., B.S., 1942 (Univ. Queensland), Christian Street, Clayfield.

Gordon, Douglas, M.B., B.S., 1942 (Univ. Queensland), 71, Qualtrough Street, Buranda.

Hales, Francis Norman, M.B., B.S., 1942 (Univ. Queensland), Corner of Holland Road and Lamette Street, Holland Park, S.E.3.

Henderson, John William Philp, M.B., B.S., 1942 (Univ. Queensland), Neulans Road, Indooroopilly.

Lester, Ivan Alexander, M.B., B.S., 1942 (Univ. Queensland), Garrick Street, Coolangatta.

Lloyd, Owen Neville, M.B., B.S., 1942 (Univ. Queensland), Welwyn Crescent, Cooparoo, S.E.2.

Macdonald, George Grant, M.B., B.S., 1942 (Univ. Queensland), 94, Bayview Terrace, Clayfield.

McMahon, Clement Matthew, M.B., B.S., 1942 (Univ. Queensland), Bage Street, Toombul, N.E.3.

McMenamin, Bernard Patrick, M.B., B.S., 1942 (Univ. Queensland), Swan Street, Shorncliffe.

Patrick, Preston Ross, M.B., B.S., 1942 (Univ. Queensland), Alford Street, Kingaroy.

Prentice, Peter George Driver, M.B., B.S., 1942 (Univ. Queensland), "Palmarosa", Queen's Road, Hamilton, N.2.

Quinn, Redmond Lawrence, M.B., B.S., 1942 (Univ. Queensland), Wilkie Street, Yeeronpilly, S.4.

Roe, Charles, M.B., B.S., 1942 (Univ. Queensland), 42, Croydon Street, Toowong, S.W.1.

Ruscoe, George Aston, M.B., B.S., 1942 (Univ. Queensland), Brisbane General Hospital, Brisbane.

Sampson, Noel Atkin, M.B., B.S., 1942 (Univ. Queensland), Oxley Road, Corinda, S.W.4.

Simmonds, Wilfred John, M.B., B.S., 1942 (Univ. Queensland), 11, Windsor Road, Red Hill.

Sinnamon, Cecil Norman, M.B., B.S., 1942 (Univ. Queensland), General Hospital, Ipswich.

Thomson, Evan Rees Whitaker, M.B., B.S., 1942 (Univ. Queensland), 9, Fortitude Street, Auchenflower, S.W.1.

Trotter, James Elphinstone, M.B., B.S., 1942 (Univ. Queensland), Stanley Terrace, Taringa, S.W.1.

Wilkinson, Cyril Ignatius, M.B., B.S., 1942 (Univ. Queensland), Maxwell Street, New Farm, N.1.

Wright, Gordon Lewis Thomas, M.B., B.S., 1942 (Univ. Queensland), Cedar Street, Wynnum Central, E.2.

Youatt, Herbert Harold M.B., B.S., 1942 (Univ. Queensland), Holland Terrace, Camp Hill.

Brenner, Maksymiljan, M.B., B.S., 1942 (Univ. Queensland), 107, Adelaide Street, Clayfield.

Goldberger, Elizabeth, M.B., B.S., 1942 (Univ. Queensland), 225, Lutwyche Road, Windsor.

Peretz, Walter, M.B., B.S., 1942 (Univ. Queensland), 3, Gannon Street, Windsor, N.3.

Schubert, Karl, M.B., B.S., 1942 (Univ. Queensland), 110, Hamilton Road, Hamilton, N.2.

Obituary.

GEORGE JOSEPH LEY.

We regret to announce the death of Dr. George Joseph Ley, which occurred on July 11, 1942, at Warragul, Victoria.

Nominations and Elections.

THE undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Dunn, Richard Evelyn, M.B., B.S., 1942 (Univ. Sydney), 213, Burwood Road, Burwood.

Lane, Alan Ingram, M.B., B.S., 1942 (Univ. Sydney), Sydney Hospital, Sydney.

The undermentioned has applied for election as a member of the Tasmanian Branch of the British Medical Association:

Jamieson, Thomas John Knox, M.B., B.S., 1941 (Univ. Melbourne), Royal Hobart Hospital, Hobart.

The undermentioned have applied for election as members of the South Australian Branch of the British Medical Association:

Rowe, Allan Gordon, M.B., B.S., 1942 (Univ. Adelaide), 19, Brigalow Avenue, Kensington Gardens.

Chambers, William Charles Teesdale, M.B., B.S., 1942 (Univ. Adelaide), 30, Dutton Terrace, Medindie.

Jeffries, John Singleton, M.B., B.S., 1942 (Univ. Adelaide), Royal Adelaide Hospital, Adelaide.

The undermentioned have been elected members of the South Australian Branch of the British Medical Association:

Hunter, Allan Geoffrey, M.B., B.S., 1942 (Univ. Adelaide), Royal Adelaide Hospital, Adelaide.

Holmes, Henry Bertram, M.B., B.S., 1940 (Univ. Adelaide), Royal Australian Navy.

Medical Appointments.

Dr. Anton Breinl has been appointed a Trustee of the Townsville Grammar School, Queensland, in pursuance of the provisions of the *Grammar Schools Act*, 1860.

Pursuant to the provisions of *The Medical Acts*, 1939 to 1940 (Queensland), Dr. Jack Mowbray Thomson, M.B., Ch.M. (Sydney), D.P.H. (England), has been appointed to sit as an Assessor with the Judge for the time being constituting the Medical Assessment Tribunal in any case in which the present Assessor, Sir Raphael West Cilento, Kt.B., M.D., B.S. (Adelaide), D.T.M. and H. (England), F.R.San.I. (London), is, for any reason, unable to sit.

Dr. John Frederick Munton Payne has been appointed as Local Medical Officer of Health for the Municipality of Devonport, Tasmania, such appointment to date and take effect as and from June 8, 1942.

Dr. Herbert Berkeley Deane Vaughan has been appointed a Certifying Medical Practitioner and a Medical Referee at Port Fairy, Victoria, pursuant to the provisions of the *Workers' Compensation Acts*.

Books Received.

"The Holy Nativity and Modern Science, or the Bible and the Cell Theory", by Jessie B. Simpson, M.B., B.S. (Melbourne); 1941. Sydney: Angus and Robertson Limited. Crown 8vo, pp. 20.

"Diseases of the Eye", by Sir John Herbert Parsons, C.B.E., F.R.C.S., F.R.S.; Tenth Edition; 1942. London: J. & A. Churchill Limited. Medium 8vo, pp. 754, with 21 plates and 372 text figures. Price: 25s. net.

"Dermatologic Therapy in General Practice", by Marion B. Sulzberger, M.D., Lt. Comdr. (M.C.), U.S.N.R., and Jack Wolf, M.D.; Second Edition; 1942. Chicago: The Year Book Publishers, Incorporated. Demy 8vo, pp. 652 with 67 illustrations. Price: $5.00 net.

"A Practical Method of Self-Analysis, Enabling Anyone to Become Deeply Psycho-Analyzed Without a Personal Analyst", by E. Pickworth Farrow, M.A., D.Sc., with foreword by the late Professor Sigmund Freud, M.D., LL.D.; 1942. London: George Allen and Unwin Limited. Crown 8vo, pp. 170. Price: 6s. net.

Diary for the Month.

JULY 21.—New South Wales Branch, B.M.A.: Ethics Committee.
JULY 23.—New South Wales Branch, B.M.A.: Clinical Meeting.
JULY 24.—Queensland Branch, B.M.A.: Council.
JULY 28.—New South Wales Branch, B.M.A.: Medical Politics Committee.
JULY 30.—New South Wales Branch, B.M.A.: Branch.
JULY 30.—South Australian Branch, B.M.A.: Branch.
JULY 31.—Tasmanian Branch, B.M.A.: Council.
AUG. 4.—New South Wales Branch, B.M.A.: Organization and Science Committee.
AUG. 5.—Western Australian Branch, B.M.A.: Council.
AUG. 6.—South Australian Branch, B.M.A.: Council.
AUG. 7.—Queensland Branch, B.M.A.: Branch.
AUG. 11.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
AUG. 11.—Tasmanian Branch, B.M.A.: Branch.
AUG. 14.—Queensland Branch, B.M.A.: Council.
AUG. 18.—New South Wales Branch, B.M.A.: Ethics Committee.
AUG. 19.—Western Australian Branch, B.M.A.: Branch.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1

New South Wales Branch (Honorary Secretary, 135, Macquarie Street, Sydney): Australian Natives' Association; Ashfield and District United Friendly Societies' Dispensary; Balmain United Friendly Societies' Dispensary; Leichhardt and Petersham United Friendly Societies' Dispensary; Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phœnix Mutual Provident Society.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federated Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178, North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205, Saint George's Terrace, Perth): Wiluna Hospital; all Contract Practice appointments in Western Australia.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to the Editor, THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales (Telephones: MW 2651-2.)

Members and subscribers are requested to notify the Manager, THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this journal. The management cannot accept any responsibility unless such a notification is received within one month.

SUBSCRIPTION RATES.—Medical students and others not receiving THE MEDICAL JOURNAL OF AUSTRALIA in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £2 for Australia and £2 5s. abroad *per annum* payable in advance.